

Rocky Flats Plant
North American Space Operations
P.O. Box 484
Golden, Colorado 80402-0484



**Rockwell
International**

RCRA PART B PERMIT APPLICATION

HAZARDOUS WASTE

VOLUMES 1 AND 2

RF-860 (3/85)

Copy 3 of 10 Copies

Second Printing



0026294

Department of Energy

ALBUQUERQUE OPERATIONS
ROCKY FLATS AREA OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

November 1, 1985

HAND-DELIVERED

Mr. Randy Jones, Chief
Hazardous Waste Permits Section
Colorado Department of Health
4210 East 11th Avenue
Denver, CO 80220

Dear Randy:

Enclosed is the U. S. Department of Energy's Part B Permit Application for hazardous wastes at the Department of Energy's Rocky Flats Plant. This Application is made pursuant to Section 3005 of the Resource Conservation and Recovery Act (RCRA), 25-15-303 Colorado Revised Statutes, and in response to the Colorado Department of Health's certified letter dated April 18, 1985. Although Rockwell International Corporation ("Rockwell") executes this Permit Application as "Operator" of the facility, it should be noted that the Department of Energy retains and exercises general control and responsibility for the facility's overall operations, including approval of facility and site modifications and improvements to meet environmental requirements. The Rocky Flats Plant is owned and controlled by the United States Government. All operations conducted at this facility are for the sole purpose of carrying out the responsibilities of the Department under the Atomic Energy Act of 1954 and the Department of Energy Organization Act. The day-to-day control and management of operations at this facility are conducted for the Department of Energy by Rockwell under a cost-type, advance-funds, management and operating contract.

You will note that the Application contains information for hazardous wastes activities and does not present data on "radioactive mixed wastes". A Part B Permit Application for "radioactive mixed wastes" will be filed with the Environmental Protection Agency by the November 8, 1985 statutory deadline to preserve our interim status for these waste units on the assumption that the Department of Energy and EPA promulgate rules defining "by-product material" which, like "source", and "special nuclear" material, will remain subject to exclusive Department of Energy control under the Atomic Energy Act. The rules will then leave "radioactive mixed wastes" to be regulated under both the Atomic Energy Act (radioactive aspects) and RCRA (chemical hazardous aspects). It is our understanding that the Department of Energy will issue proposed rules on this matter by November 6, 1985. We will furnish you with a copy of the proposed rules as soon as they are available.

ADMIN RECORD

SW-A-005233

It is also our understanding that after the Department of Energy and EPA rulemaking occurs, EPA may authorize the states to regulate "radioactive mixed wastes" under equivalent programs. If this occurs and Colorado is so authorized, we will, of course, be dealing directly with your office in the future on the Part B Application for "radioactive mixed wastes".

Please note the submitted Application does not include information on RCRA section 3004(u) or groundwater monitoring. Since Colorado has not yet been delegated authority to implement the 1984 RCRA amendments, no section 3004(u) corrective action information is being provided at this time. Furthermore, EPA has recognized the existence of unresolved legal and policy issues surrounding the applicability of section 3004(u) to Federal facilities (see 50 F.R. 28702, July 15, 1985) and has stated that no Federal facility application will be rejected as incomplete for failure to include 3004(u) information. Groundwater monitoring information is not included in this submission because it is our position that Rocky Flats manages no RCRA "regulated units"; i.e. surface impoundments, landfills, waste piles or land treatment units.

Also please be advised that our Application bears the EPA identification number COD 078343407, which we presume to be correct as we have not received any official notification to the contrary. We did, however, notice a reference to our facility as EPA ID C07890010526 in EPA correspondence dated May 10, 1985.

We look forward to working with your Division in developing a workable and effective Part B Permit and pledge our cooperation and industry in this endeavor. A signed copy of this Permit Application is being sent concurrently to EPA due to the inclusion in the Application of information on recycle of radiographic solutions, a 1984 RCRA Amendment matter which we understand EPA will regulate at this time.

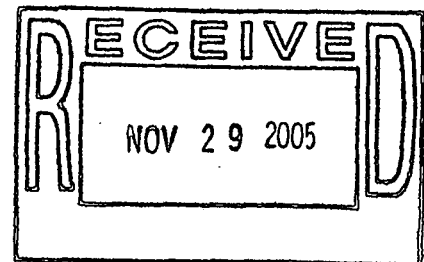
Sincerely,


Jerry L. Bellows
Acting Area Manager

Enclosure

cc w/enc:

Mr. Lawrence A Wapensky, Ch, RCRA Permit Section, EPA



Volume 1

Resource Conservation and Recovery Act

PART B PERMIT APPLICATION
CODO78343407

Submitted by

Department of Energy's Rocky Flats Plant
Golden, Colorado

to

Colorado Department of Health
Waste Management Division
Denver, Colorado

1 November 1985

Prepared by

Roy F. Weston, Inc.
938 Quail Street
Denver, Colorado 80215
In Association with
Chen and Associates, Inc.

Reviewed for Classification/UCNI/OUO
By: Janet Nesheim, Derivative Classifier
DOE, EMCBC
Date: 11-04-08
Confirmed Unclassified, Not UCNI/Not OUO

VOLUME 1
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Date: November 1, 1985

Revision No.: 0

ROCKWELL INTERNATIONAL
ROCKY FLATS PLANT
GOLDEN, COLORADO

Record of Amendments

[illegible]

CODO78343407

Date: November 1, 1985
Revision No.: 0
A

A - REVISED PART A APPLICATION

CODO78343407

Date: November 1, 1985
Revision No.: 0
A

SECTION A

REVISED PART A APPLICATION (CHWR 100.4)

This section contains the revised and updated Part A application for the existing U.S. Department of Energy Rocky Flats Plant facility, as described in section D of this application.

A revised Part A application was submitted on 31 May 1985 and is on file with the U.S. Environmental Protection Agency (EPA) and the Colorado Department of Health (CDH) to describe the present facility, which is under interim permit status until a final permit is issued.

FORM 1 GENERAL		 U.S. ENVIRONMENTAL PROTECTION AGENCY GENERAL INFORMATION Consolidated Permits Program (Read the "General Instructions" before starting.)		EPA I.D. NUMBER F C O D 0 7 8 3 4 3 4 0 7																									
EXCEL ITEMS I. EPA I.D. NUMBER CILITY NAME V. FACILITY MAILING ADDRESS VI. FACILITY LOCATION		COD078343407 U.S. DOE ROCKY FLATS PLANT P.O.Box 928 Golden, Colorado 80402 Sec. 2, Range 70W, Township 2S Jefferson County Golden, Colorado 80402		GENERAL INSTRUCTIONS If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill-in area below. Also, if any of the preprinted data is absent (the area to the left of the label space lists the information that should appear), please provide it in the proper fill-in area(s) below. If the label is complete and correct, you need not complete items I, III, V, and VI (except VI-B which must be completed regardless). Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.																									
II. POLLUTANT CHARACTERISTICS INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold-faced terms.																													
SPECIFIC QUESTIONS		MARK "X" YES NO FORM ATTACHED		SPECIFIC QUESTIONS																									
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		YES NO FORM ATTACHED 11 12 13 X		B. Does or will this facility (either existing or proposed) include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)																									
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)		YES NO FORM ATTACHED 21 22 23 X		D. Is this a proposed facility (other than those described in A or B above) which will result in a discharge to waters of the U.S.? (FORM 2D)																									
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)		YES NO FORM ATTACHED 31 32 33 X		F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)																									
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		YES NO FORM ATTACHED 41 42 43 X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)																									
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		YES NO FORM ATTACHED 51 52 53 X		J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)																									
III. NAME OF FACILITY 1 SKIP U.S. DOE ROCKY FLATS PLANT																													
IV. FACILITY CONTACT <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="3" style="text-align: center;">A. NAME & TITLE (last, first, & title)</td> <td colspan="3" style="text-align: center;">B. PHONE (area code & no.)</td> </tr> <tr> <td colspan="3">2 BELLOWS, J.L. ACTING AREA MGR</td> <td colspan="3">3 03 966 2025</td> </tr> </table>						A. NAME & TITLE (last, first, & title)			B. PHONE (area code & no.)			2 BELLOWS, J.L. ACTING AREA MGR			3 03 966 2025														
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V. FACILITY MAILING ADDRESS <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="2" style="text-align: center;">A. STREET OR P.O. BOX</td> <td colspan="2" style="text-align: center;">B. CITY OR TOWN</td> <td style="text-align: center;">C. STATE</td> <td style="text-align: center;">D. ZIP CODE</td> </tr> <tr> <td colspan="2">3 P.O. BOX 928</td> <td colspan="2">4 GOLDEN</td> <td style="text-align: center;">5 CO</td> <td style="text-align: center;">6 80402</td> </tr> </table>						A. STREET OR P.O. BOX		B. CITY OR TOWN		C. STATE	D. ZIP CODE	3 P.O. BOX 928		4 GOLDEN		5 CO	6 80402												
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C. CITY OR TOWN				D. STATE	E. ZIP CODE																								
9 GOLDEN				10 CO	11 80402																								

A. FIRST										B. SECOND									
7 9 7 1 1 (specify) NATIONAL SECURITY										7 3 4 9 9 (specify) FABRICATED METAL PARTS (NEC)									
C. THIRD										D. FOURTH									
7 2 9 9 (specify) CHEMICALS & CHEMICAL PREPARATIONS										7 8 9 9 9 (specify) SERVICES (NEC)									
VI. RATOR INFORMATION																			
A. NAME																		B. Is the name listed in Item VIII-A also the owner? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	
8 ROCKWELL INTERNATIONAL CORPORATION																			
C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)																		D. PHONE (area code & no.)	
F - FEDERAL M - PUBLIC (other than federal or state) S - STATE O - OTHER (specify) P - PRIVATE																		0 (specify) DOE PRIME CONTRACTOR	
E. STREET OR P.O. BOX																		3 0 3 9 6 6 7 0 0 0	
P.O. BOX 464																			
F. CITY OR TOWN										G. STATE		H. ZIP CODE		IX. INDIAN LAND					
B GOLDEN										C O		E 0 4 0 2		Is the facility located on Indian land? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					
X. EXISTING ENVIRONMENTAL PERMITS																			
A. NPDES (Discharges to Surface Water)										D. PSD (Air Emissions from Proposed Sources)									
9 N C.O. 0,0,0,1,3,3,3										9 P S.E.E. ATTACH #1									
B. UIC (Underground Injection of Fluids)										E. OTHER (specify)									
9 U										9 S.E.E. ATTACH #1 (specify)									
C. RCRA (Hazardous Wastes)										E. OTHER (specify)									
9 R C.O.D.O. 7,8,3,4,3,4,0,7										9 S.E.E. ATTACH #1 (specify)									
XI.																			
A. To this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.																			
XII. NATURE OF BUSINESS (provide a brief description)																			
The Rocky Flats Plant is a Government-owned facility with a primary mission of producing plutonium components for nuclear weapons. Production activities involve the fabrication of plutonium, uranium, beryllium and stainless steel parts. Other activities include chemical processing to recover plutonium from scrap material, R&D work in metallurgy, machining, assembly, nondestructive testing, coatings, remote engineering, chemistry and physics. Parts made at the Plant are shipped elsewhere for final assembly. The Plant is operated under the authority of the Atomic Energy Act of 1954 as amended.																			
XIII. CERTIFICATION (see instructions)																			
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (See Form 1, Attachment 2)																			
A. NAME & OFFICIAL TITLE (type or print)										B. SIGNATURE					C. DATE SIGNED				
L. Bellows Area Manager, REAO USDOE																			
COMMENTS FOR OFFICIAL USE ONLY																			

FORM 1
ATTACHMENT 1

EPA I.D. NUMBER: COD 078343407

Item X, E, Existing Environmental Permits (continued)

E. Other (specify)

AIR POLLUTION EMISSION NOTICES

The Rocky Flats Plant has filed Air Pollution Emission Notices (APENS) with the State of Colorado for 38 production and laboratory building emission points and for four steam plant boilers.

COLORADO DEPARTMENT OF HEALTH INCINERATOR PERMITS

Application
Number

Permit

C - 13,022 Building 776 Fluid Bed Incinerators

Other plant incinerators not expected to be used for hazardous wastes:

C - 12,931 Building 121 Incinerator

C - 12,932 Building 771 Incinerator

Note: Previous Part A applications listed four additional incinerators. Two of these incinerators with permit application numbers C - 12,930.1 and C - 12,930.2 are in Building 371 and were never placed into active service. They will be disassembled and removed from the building. The other two with permit application numbers C - 12,115 and C - 12,896 were pilot-scale incinerators located in Building 701. They are no longer in service.

BROOMFIELD SATELLITE FACILITY WASTE WATER DISCHARGE PERMIT

This is a permit for a pipe fabrication facility operated by Rockwell International which is located in the City of Broomfield.

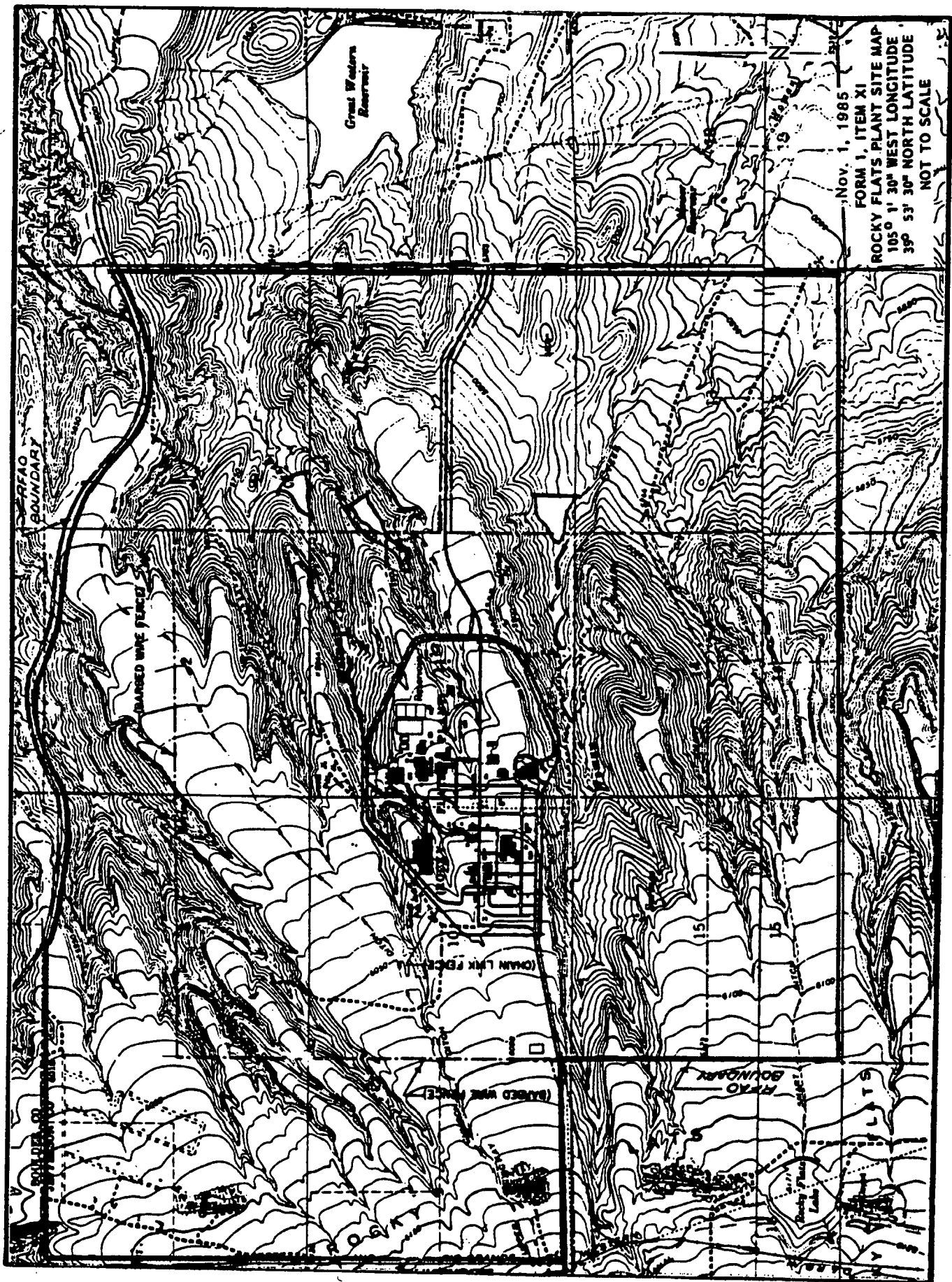
5927A
5993A

A-1c

FORM 1
ATTACHMENT 2

This certification is made subject to the statements made
in the attached cover letter dated November 1, 1985 and signed
by J.L.Bellows.

A-ld



Nov. 1, 1985
FORM 1, ITEM XI
ROCKY FLATS PLANT SITE MAP
105° 1' 30" WEST LONGITUDE
39° 53' NORTH LATITUDE
NOT TO SCALE

FORM 3

RCRA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER

FCOD078343407

FOR OFFICIAL USE ONLY

APPLICATION NUMBER

DATE RECEIVED (yr., mo., & day)

COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION (place an "X" below and provide the appropriate date)

1. EXISTING FACILITY (See instructions for definition of "existing" facility. Complete item below.)

2. NEW FACILITY (Complete item below.)

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED (use the boxes to the left)

FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN

B. REVISED APPLICATION (place an "X" below and complete item I above)

1. FACILITY HAS INTERIM STATUS

2. FACILITY HAS A RCRA PERMIT

III. PROCESSES - CODES AND DESIGN CAPACITIES

A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the form (Item III-C).

B. PROCESS DESIGN CAPACITY - For each code entered in column A enter the capacity of the process.

2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY	PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:			Treatment:		
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS	TANK	T01	GALLONS PER DAY OR LITERS PER DAY
TANK	S02	GALLONS OR LITERS	SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS	INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS		T04	GALLONS PER HOUR OR LITERS PER HOUR
WELL	D79	GALLONS OR LITERS	OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the process in the space provided; Item III-C.)		
WELL	D80	ACRE-FEET (the volume that would cover one acre to a depth of one foot) OR HECTARE-METER			
LAND APPLICATION	D81	ACRES OR HECTARES			
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY			
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS			

UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	S
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

DUP

1

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY		FOR OFFICIAL USE ONLY
		1. AMOUNT (specify)	2. UNIT OF MEASURE (enter code)	
X-1	S02	600	G	
X-2	T01	20	F	
1	S01	1000.0	G	
2	S01	25.0	G	
3	S01	100.0	G	
4	S01	1000.0	G	
5	S01	55.0	G	
6	S01	0.00072 T/hr	D	
7	S01	1.0	G	
8	S01	500.0	G	
9	S01	5000.0	G	
10	S01	500.0	G	

DOES NOT CONTAIN
OFFICIAL USE ONLY INFORMATION

Name/Org: *ENRAC (Casey)* Date: *11-04-08*

FORM 3 RCRA	U.S. ENVIRONMENTAL PROTECTION AGENCY HAZARDOUS WASTE PERMIT APPLICATION Consolidated Permits Program <i>(This information is required under Section 3005 of RCRA.)</i>	I. EPA I.D. NUMBER <div style="border: 1px solid black; padding: 2px; display: inline-block;"> F C O D 0 7 8 3 4 3 4 0 7 1 </div>
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FOR OFFICIAL USE ONLY		COMMENTS
APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION (place an "X" below and provide the appropriate date) <input checked="" type="checkbox"/> 1. EXISTING FACILITY (See instructions for definition of "existing" facility. Complete item below.) <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED (use the boxes to the left) <div style="display: flex; justify-content: space-between;"> <div> YR. MO. DAY 8 5 2 N A N A </div> </div> </div> <div style="width: 45%;"> <input type="checkbox"/> 2. NEW FACILITY (Complete item below.) FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN <div style="display: flex; justify-content: space-between;"> <div> YR. MO. DAY 7 2 2 7 2 2 7 2 2 </div> </div> </div> </div>
--

B. REVISED APPLICATION (place an "X" below and complete item I above) <input checked="" type="checkbox"/> 1. FACILITY HAS INTERIM STATUS	<input type="checkbox"/> 2. FACILITY HAS A RCRA PERMIT
--	--

III. PROCESSES - CODES AND DESIGN CAPACITIES

A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the form (Item III-C).

B. PROCESS DESIGN CAPACITY - For each code entered in column A enter the capacity of the process.

2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	CODE	DESIGN CAPACITY	PROCESS	CODE	DESIGN CAPACITY
Storage:					
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS	TANK	T01	GALLONS PER DAY OR LITERS PER DAY
WASTE PILE	S02	GALLONS OR LITERS	SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
	S03	CUBIC YARDS OR CUBIC METERS		T03	TONS PER HOUR OR METRIC TONS PER HOUR
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS	INCINERATOR	T04	GALLONS PER HOUR OR LITERS PER HOUR
ION WELL	D79	GALLONS OR LITERS	OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)		
ILL	D80	ACRE-FEET (the volume that would cover one acre to a depth of one foot) OR HECTARE-METER			
LAND APPLICATION	D81	ACRES OR HECTARES			
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY			
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS			

UNIT OF MEASURE	CODE	UNIT OF MEASURE	CODE	UNIT OF MEASURE	CODE
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A
LITERS	L	TONS PER HOUR	O	HECTARE-METER	F
CUBIC YARDS	Y	METRIC TONS PER HOUR	M	ACRES	E
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	G
GALLONS PER DAY	U	LITERS PER HOUR	H		

EXAMPLE FOR COMPLETING ITEM III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

<div style="display: flex; justify-content: space-between;"> 13 14 15 16 17 18 </div>									
LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY	UNIT OF MEASURE (enter code)	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY	UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	
X-1	S 0 2	600	G	15	S 0 1	10,000.0	G		
X-2	T 0 1	20	F	16	S 0 1	100.0	G		
11	S 0 1	500.0	G	17	S 0 1	25,000.0	G		
12		1,000.0	G	18	S 0 1	0.0000072 T/hr	D		
13		0.000052 MT/hr	M	19	S 0 1	0.00019 T/hr	D		
14		500.0	G	20	S 0 1	0.00019 T/hr	D		

DOES NOT CONTAIN
OFFICIAL USE ONLY INFORMATION

Name/Org: *ABC Co.* Date: *11-04-08*

FORM 3		U.S. ENVIRONMENTAL PROTECTION AGENCY HAZARDOUS WASTE PERMIT APPLICATION Consolidated Permit Program <i>(This information is required under Section 3005 of RCRA.)</i>	1. EPA I.D. NUMBER <div style="border: 1px solid black; padding: 2px; display: flex; justify-content: space-between;"> FCOD078343407 TIA 1 </div>
FOR OFFICIAL USE ONLY			
APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS	
II. FIRST OR REVISED APPLICATION			
Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.			
A. FIRST APPLICATION (place an "X" below and provide the appropriate data)			
<input checked="" type="checkbox"/> 1. EXISTING FACILITY (See instructions for definition of "existing" facility. Complete item below.)		<input type="checkbox"/> 2. NEW FACILITY (Complete item below.)	
<div style="border: 1px solid black; padding: 2px;">8</div>	<div style="border: 1px solid black; padding: 2px;">5</div>	<div style="border: 1px solid black; padding: 2px;">2</div>	<div style="border: 1px solid black; padding: 2px;">N</div>
FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED (use the boxes to the left)			
B. REVISED APPLICATION (place an "X" below and complete item I above)			
<input checked="" type="checkbox"/> 1. FACILITY HAS INTERIM STATUS		<input type="checkbox"/> 2. FACILITY HAS A RCRA PERMIT	
III. PROCESSES - CODES AND DESIGN CAPACITIES			
A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the form (Item III-C).			
B. PROCESS DESIGN CAPACITY - For each code entered in column A enter the capacity of the process.			
2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.			
PROCESS	PRO- CESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS	PROCESS
DESIGN CAPACITY	DESIGN CAPACITY	DESIGN CAPACITY	DESIGN CAPACITY
Storage: CONTAINER (barrel, drum, etc.) S01 TANK S02 WASTE PILE S03		Treatment: TANK T01 SURFACE IMPOUNDMENT T02 INCINERATOR T03	
SURFACE IMPOUNDMENT S04 IN WELL S05 LAND APPLICATION S06 OCEAN DISPOSAL S07 SURFACE IMPOUNDMENT S08		OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.) T04	
UNIT OF MEASURE CODE GALLONS G LITERS L CUBIC YARDS Y CUBIC METERS C GALLONS PER DAY U		UNIT OF MEASURE CODE LITERS PER DAY V TONS PER HOUR D METRIC TONS PER HOUR W GALLONS PER HOUR E LITERS PER HOUR H	
UNIT OF MEASURE CODE GALLONS G LITERS L CUBIC YARDS Y CUBIC METERS C GALLONS PER DAY U		UNIT OF MEASURE CODE ACRE-FEET A HECTARE-METER B ACRES P HECTARES C	
EXAMPLE FOR COMPLETING ITEM III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.			
<div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> A. PROCESS CODE (from list above) </div> <div style="width: 40%;"> B. PROCESS DESIGN CAPACITY </div> <div style="width: 20%;"> FOR OFFICIAL USE ONLY </div> </div> </div>			
LINE NUMBER	A. PROCESS CODE	B. PROCESS DESIGN CAPACITY	FOR OFFICIAL USE ONLY
16	17	18	19
20	21	22	23
24	25	26	27
28	29	30	31
32	33	34	35
36	37	38	39
40	41	42	43
44	45	46	47
48	49	50	51
52	53	54	55
56	57	58	59
60	61	62	63
64	65	66	67
68	69	70	71
72	73	74	75
76	77	78	79
80	81	82	83
84	85	86	87
88	89	90	91
92	93	94	95
96	97	98	99
100	101	102	103
104	105	106	107
108	109	110	111
112	113	114	115
116	117	118	119
120	121	122	123
124	125	126	127
128	129	130	131
132	133	134	135
136	137	138	139
140	141	142	143
144	145	146	147
148	149	150	151
152	153	154	155
156	157	158	159
160	161	162	163
164	165	166	167
168	169	170	171
172	173	174	175
176	177	178	179
180	181	182	183
184	185	186	187
188	189	190	191
192	193	194	195
196	197	198	199
200	201	202	203
204	205	206	207
208	209	210	211
212	213	214	215
216	217	218	219
220	221	222	223
224	225	226	227
228	229	230	231
232	233	234	235
236	237	238	239
240	241	242	243
244	245	246	247
248	249	250	251
252	253	254	255
256	257	258	259
260	261	262	263
264	265	266	267
268	269	270	271
272	273	274	275
276	277	278	279
280	281	282	283
284	285	286	287
288	289	290	291
292	293	294	295
296	297	298	299
300	301	302	303
304	305	306	307
308	309	310	311
312	313	314	315
316	317	318	319
320	321	322	323
324	325	326	327
328	329	330	331
332	333	334	335
336	337	338	339
340	341	342	343
344	345	346	347
348	349	350	351
352	353	354	355
356	357	358	359
360	361	362	363
364	365	366	367
368	369	370	371
372	373	374	375
376	377	378	379
380	381	382	383
384	385	386	387
388	389	390	391
392	393	394	395
396	397	398	399
400	401	402	403
404	405	406	407
408	409	410	411
412	413	414	415
416	417	418	419
420	421	422	423
424	425	426	427
428	429	430	431
432	433	434	435
436	437	438	439
440	441	442	443
444	445	446	447
448	449	450	451
452	453	454	455
456	457	458	459
460	461	462	463
464	465	466	467
468	469	470	471
472	473	474	475
476	477	478	479
480	481	482	483
484	485	486	487
488	489	490	491
492	493	494	495
496	497	498	499
500	501	502	503
504	505	506	507
508	509	510	511
512	513	514	515
516	517	518	519
520	521	522	523
524	525	526	527
528	529	530	531
532	533	534	535
536	537	538	539
540	541	542	543
544	545	546	547
548	549	550	551
552	553	554	555
556	557	558	559
560	561	562	563
564	565	566	567
568	569	570	571
572	573	574	575
576	577	578	579
580	581	582	583
584	585	586	587
588	589	590	591
592	593	594	595
596	597	598	599
600	601	602	603
604	605	606	607
608	609	610	611
612	613	614	615
616	617	618	619
620	621	622	623
624	625	626	627
628	629	630	631
632	633	634	635

FORM
3
RCRAU.S. ENVIRONMENTAL PROTECTION AGENCY
HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER

FCOD0783434071

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)

COMMENTS

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION (place an "X" below and provide the appropriate date)

- ☒ 1. EXISTING FACILITY (See instructions for definition of "existing" facility. Complete item below.)

- ☐ 2. NEW FACILITY (Complete item below.)

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED (use the boxes to the left)

YR.	MO.	DAY
8	5	2

FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN

YR.	MO.	DAY

B. REVISED APPLICATION (place an "X" below and complete Item I above)

- ☒ 1. FACILITY HAS INTERIM STATUS

- ☐ 2. FACILITY HAS A RCRA PERMIT

III. PROCESSES - CODES AND DESIGN CAPACITIES

A. PROCESS CODE - Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the form (Item III-C).

B. PROCESS DESIGN CAPACITY - For each code entered in column A enter the capacity of the process.

1. AMOUNT - Enter the amount.

2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PRO- CESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER (barrel, drum, etc.)	001	GALLONS OR LITERS
TANK	002	GALLONS OR LITERS
WASTE PILE	003	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	004	GALLONS OR LITERS

Other:		
EXTRACTION WELL	D79	GALLONS OR LITERS
OPILL	D80	ACRE-FEET (the volume that would cover one acre to a depth of one foot) OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

Treatment:

TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR

OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)

T04	GALLONS PER DAY OR LITERS PER DAY
-----	--------------------------------------

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U

UNIT OF MEASURE	UNIT OF MEASURE CODE
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H

UNIT OF MEASURE	UNIT OF MEASURE CODE
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	G

EXAMPLE FOR COMPLETING ITEM III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

C		DUP		T/A C		I				
LINE NUMBER	A. PRO- CESS CODE (from list above)	B. PROCESS DESIGN CAPACITY	1. AMOUNT (specify)	2. UNIT OF MEA- SURE (enter code)	LINE NUMBER	A. PRO- CESS CODE (from list above)	B. PROCESS DESIGN CAPACITY	1. AMOUNT	2. UNIT OF MEA- SURE (enter code)	FOR OFFICIAL USE ONLY
X-1	S 0 2		600	G	35	T 0 4		48	U	
X-2	T 0 3		20	E	6					
31	S 0 1		150	G	7					
3	0 1		42.86	G	8					
3	2 3		10	E	9					
34	0 4		34	H	10					

DOES NOT CONTAIN
OFFICIAL USE ONLY INFORMATIONName/Org: *JA Nechem* Date: *11-04-08*

III. PROCESSES (continued)

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES (code "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

T03 - Fluidized Bed Incinerators

T04 - miscellaneous bench chemical destructions for gases, and other small quantities of wastes

T04 - Silver Recovery

IV. DESCRIPTION OF HAZARDOUS WASTES

A. EPA HAZARDOUS WASTE NUMBER - Enter the four-digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four-digit number(s) from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. ESTIMATED ANNUAL QUANTITY - For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. UNIT OF MEASURE - For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS.....	P	KILOGRAMS.....	K
TONS.....	T	METRIC TONS.....	M

If records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. PROCESSES

1. PROCESS CODES:

For listed hazardous waste: For each listed hazardous waste entered in column A select the code(s) from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed hazardous waste: For each characteristic or toxic contaminant entered in column A, select the code(s) from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed hazardous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER - Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

- Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
- In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
- Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARDOUS WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES	
				1. PROCESS CODES (enter)	2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	0 0 2	400	P	T 0 3 D 8 0	
X-3	0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				included with above

NOTE: Photocopy this page before completing if you have more than 20 wastes to list.

Form Approved OME No. 158-S80004

EPA I.D. NUMBER (enter from page 1)										FOR OFFICIAL USE ONLY										
V C O D 0 7 8 3 4 3 4 0 7										DUP										
DESCRIPTION OF HAZARDOUS WASTES (continued)																				
LINE NO.	A. EPA HAZARD WASTE NO. (enter code)				B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES													
	21	22	23	24			1. PROCESS CODES (enter)													
	21	22	23	24			27	28	29	30	31	32	33	34	35	36	37	38	39	40
27	U	1	3	5	2.0	P	S	0	1	T	0	4								
	D	0	0	1																
28	D	0	0	3	1.0	P	S	0	1	T	0	4								
	U	1	3	5																
	D	J	0	2																
29	D	0	0	3	2.0	P	S	0	1	T	0	4								
	D	0	0	3																
30	D	0	0	3	15.0	K	S	0	1	T	0	4								
	D	0	0	3																
31	U	0	2	8	1,232.0	P	S	0	1											
	U	0	2	8																
32	D	0	0	7	195,280.0	P	S	0	1											
	D	0	0	7																

IV. DESCRIPTION OF HAZARDOUS WASTES

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

Line 22 - Quantity is amount of used paint solvent/sludge generated during FY 85

Line 23 - Quantity is amount of used/surplus paint of various types (oil base, latex base, etc.) that was generated during FY 83.

EPA I.D. NO. (enter from page 1)

F C O D 0 7 8 3 4 3 4 0 7 6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility (see instructions for more detail).

VI. PHOTOGRAPHS

All existing facilities must include photographs (aerial or ground-level) that clearly delineate all existing structures; existing storage, treatment and disposal area; and sites of future storage, treatment or disposal area. (See instructions for more detail.)

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)

3 9 5 3 0 3 0

LONGITUDE (degrees, minutes, & seconds)

1 0 5 1 1 0 3 0

VIII. FACILITY OWNER

☐ A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER

UNITED STATES DEPARTMENT OF ENERGY

3 0 3 9 6 6 2 0 2 5

3. STREET OR P.O. BOX

P.O. Box 928

4. CITY OR TOWN

Golden

5. ST.

CO

6. ZIP CODE

8 0 4 0 2

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (See Form 1, Attachment 2)

A. NAME (print or type)

J.L. Bellows

B. SIGNATURE

C. DATE SIGNED

X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (See Form 1, Attachment 2)

A. NAME (print or type)

J.E. Dorr

B. SIGNATURE

JED

C. DATE SIGNED

Oct 30, 1985

Form 3510-3 (6-80)

V. FACILITY DRAWING (see page 4)

See attached Rocky Flats Facility Plan, Map, and Rocky Flats Area Plan

See attached maps and photographs:

Rocky Flats Aerial Photograph

Rocky Flats Plant Site Map

Rocky Flats Legal Site Boundaries Description Drawing

Rocky Flats Plant Facility Drawing

Rocky Flats Photographs Showing Toxic Gas Container Storage Shed (2)

Rocky Flats Photographs Showing Hazardous Waste Storage Facilities (2)

Rocky Flats Photograph Showing Door Arrangement of Hazardous Waste Storage Facility

Rocky Flats Photograph Showing Interior Arrangement of Drums in Waste Storage Facility

Rocky Flats Photograph Showing Overall View of Incinerator

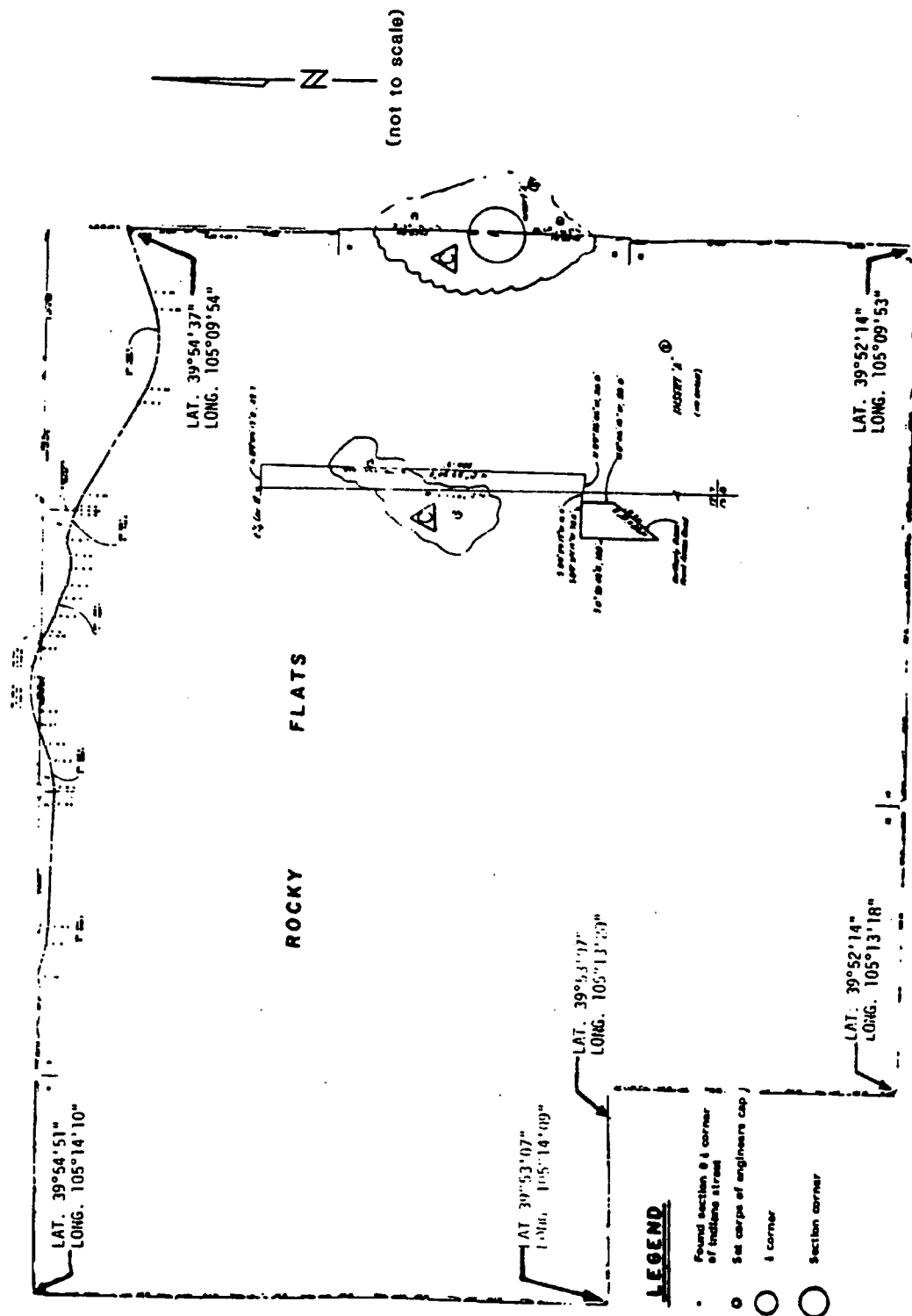
Rocky Flats Photograph Showing Silver Recovery Process Area

Rocky Flats Photograph Showing Electrochemical Milling Sludge

A-3i

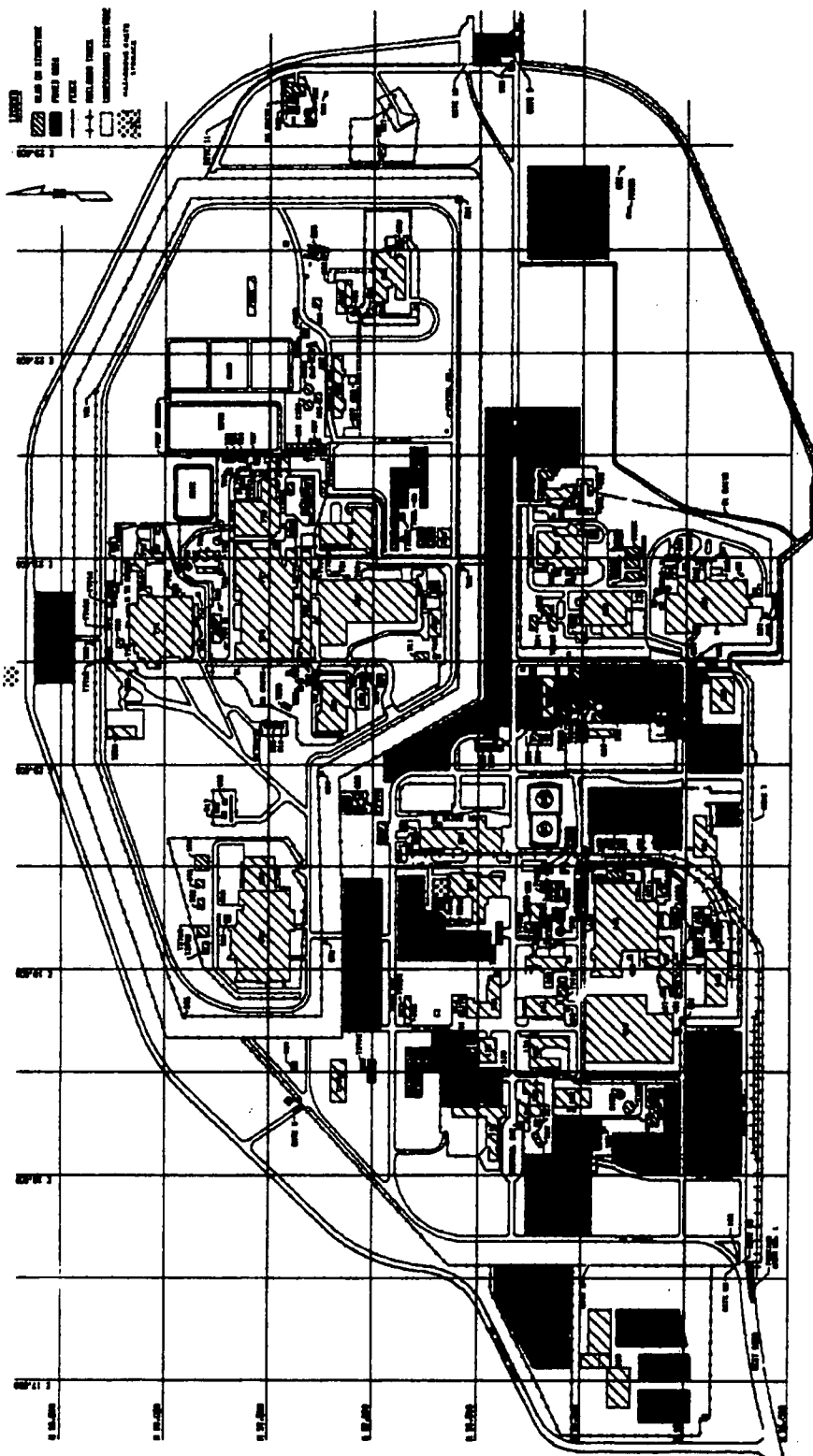


AERIAL VIEW OF ROCKY FLATS
PLANT LOOKING WEST
(November 1, 1985)



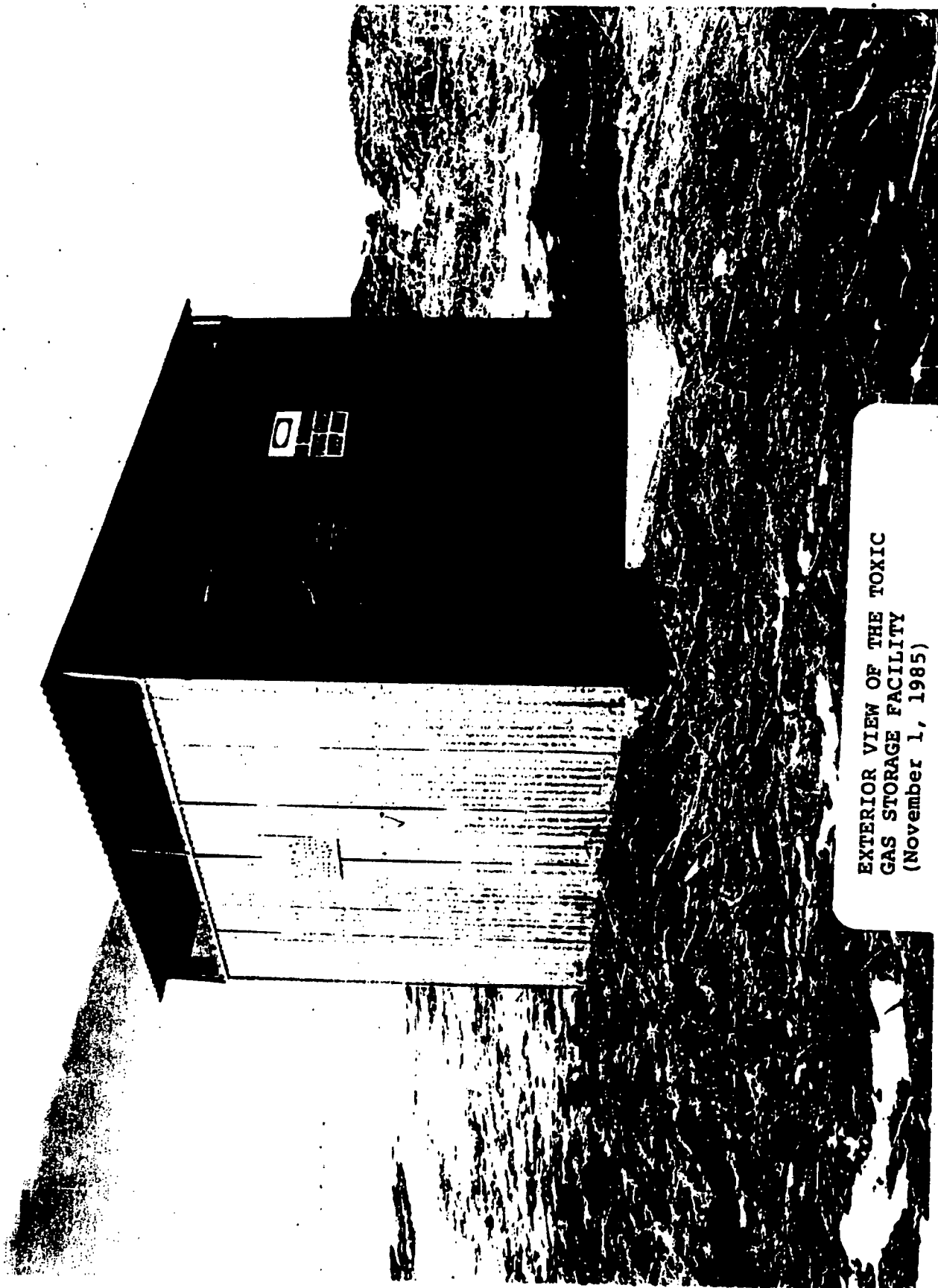
Legal Boundary Description, Rocky Flats

Nov. 1, 1985

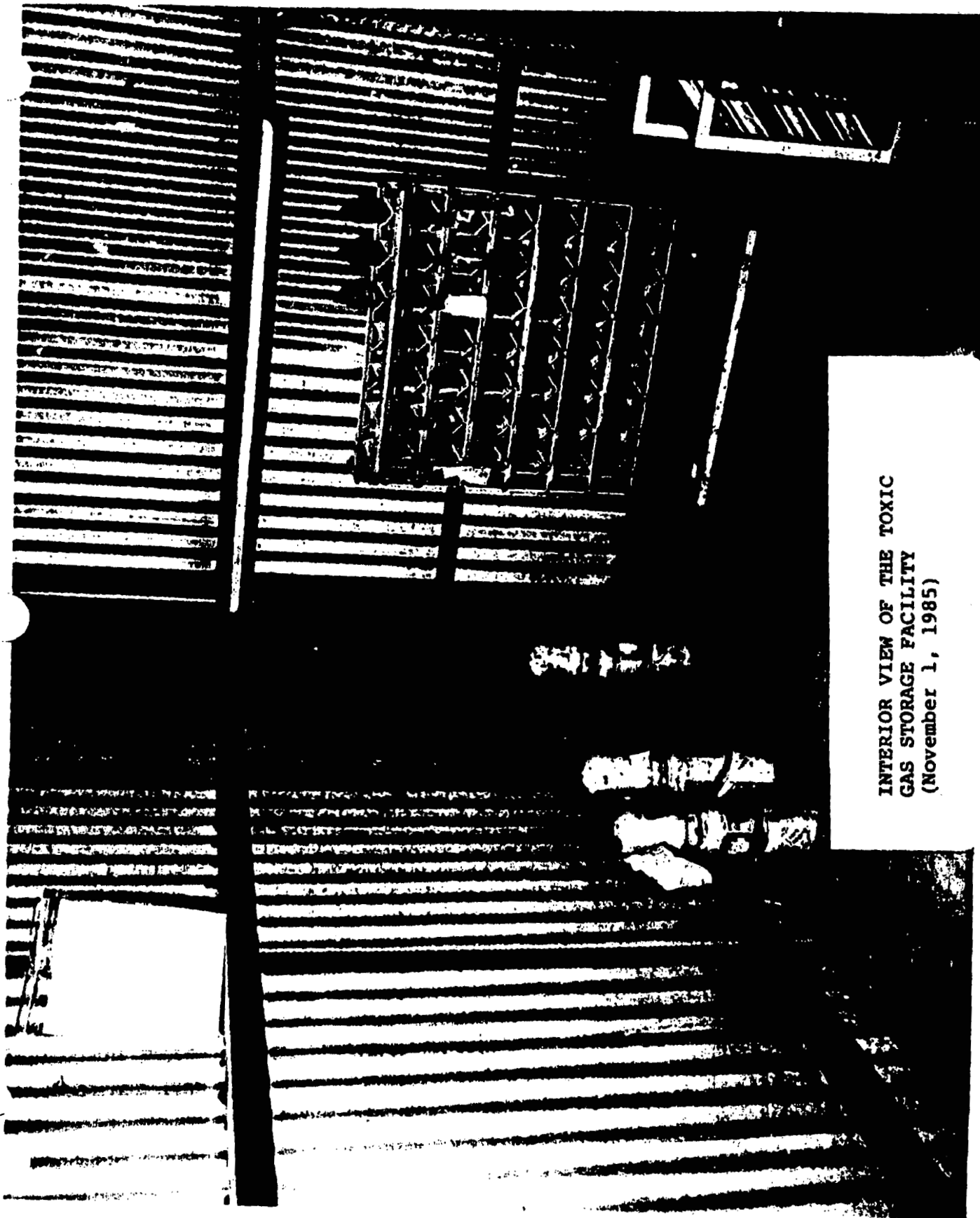


ROCKY FLATS PLANT FACILITY DRAWING

Nov. 1, 1985

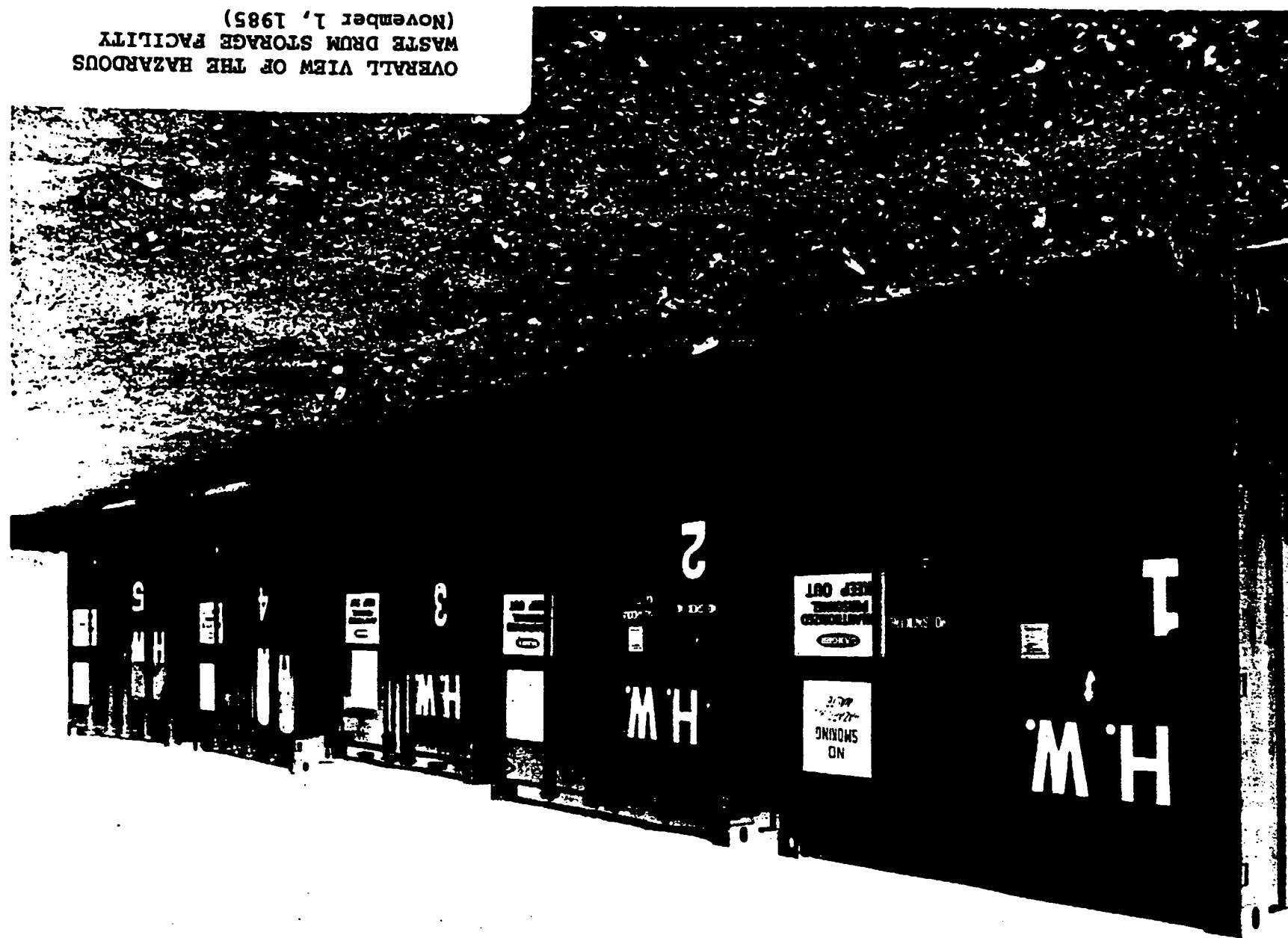


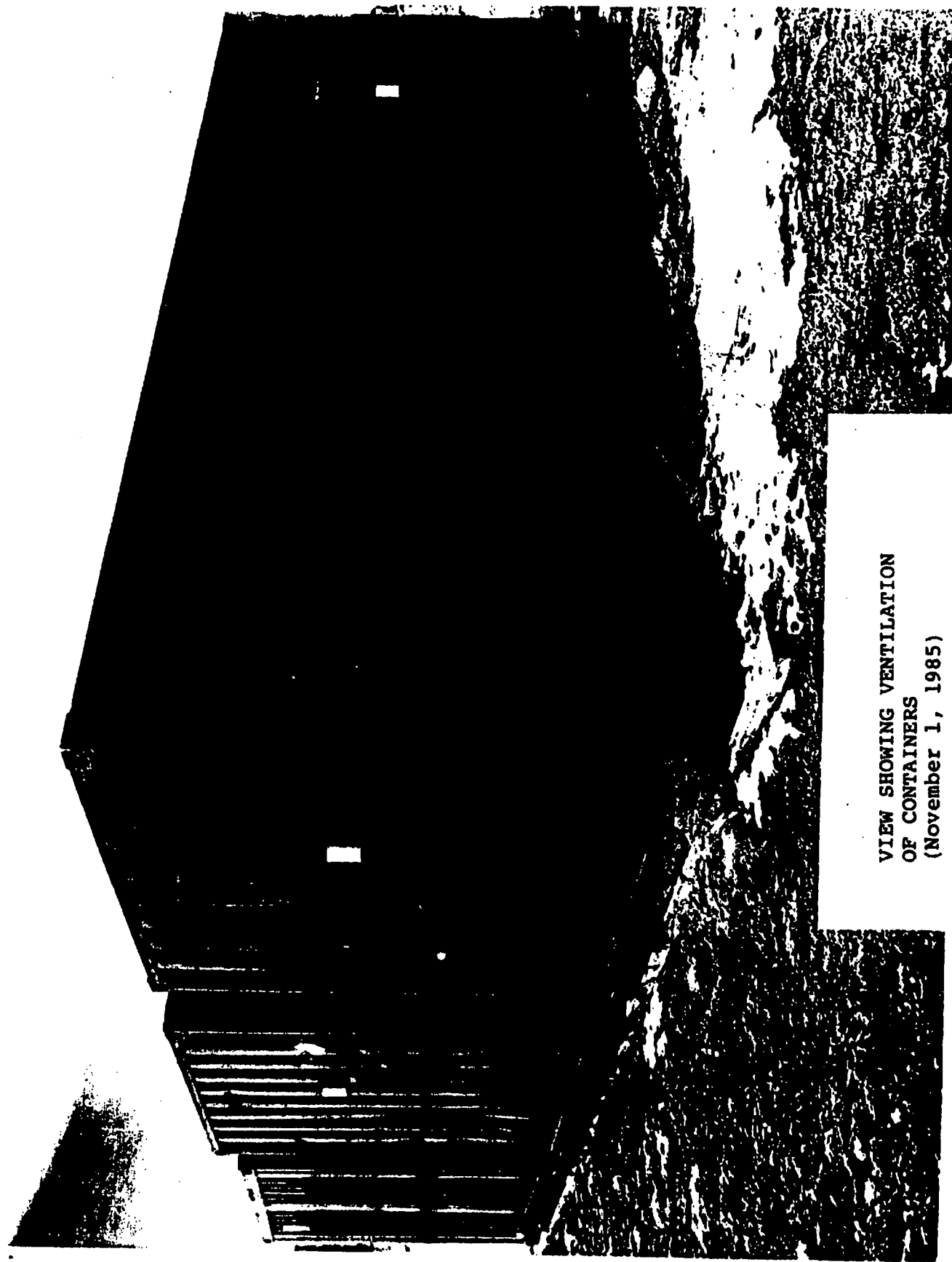
EXTERIOR VIEW OF THE TOXIC
GAS STORAGE FACILITY
(November 1, 1985)



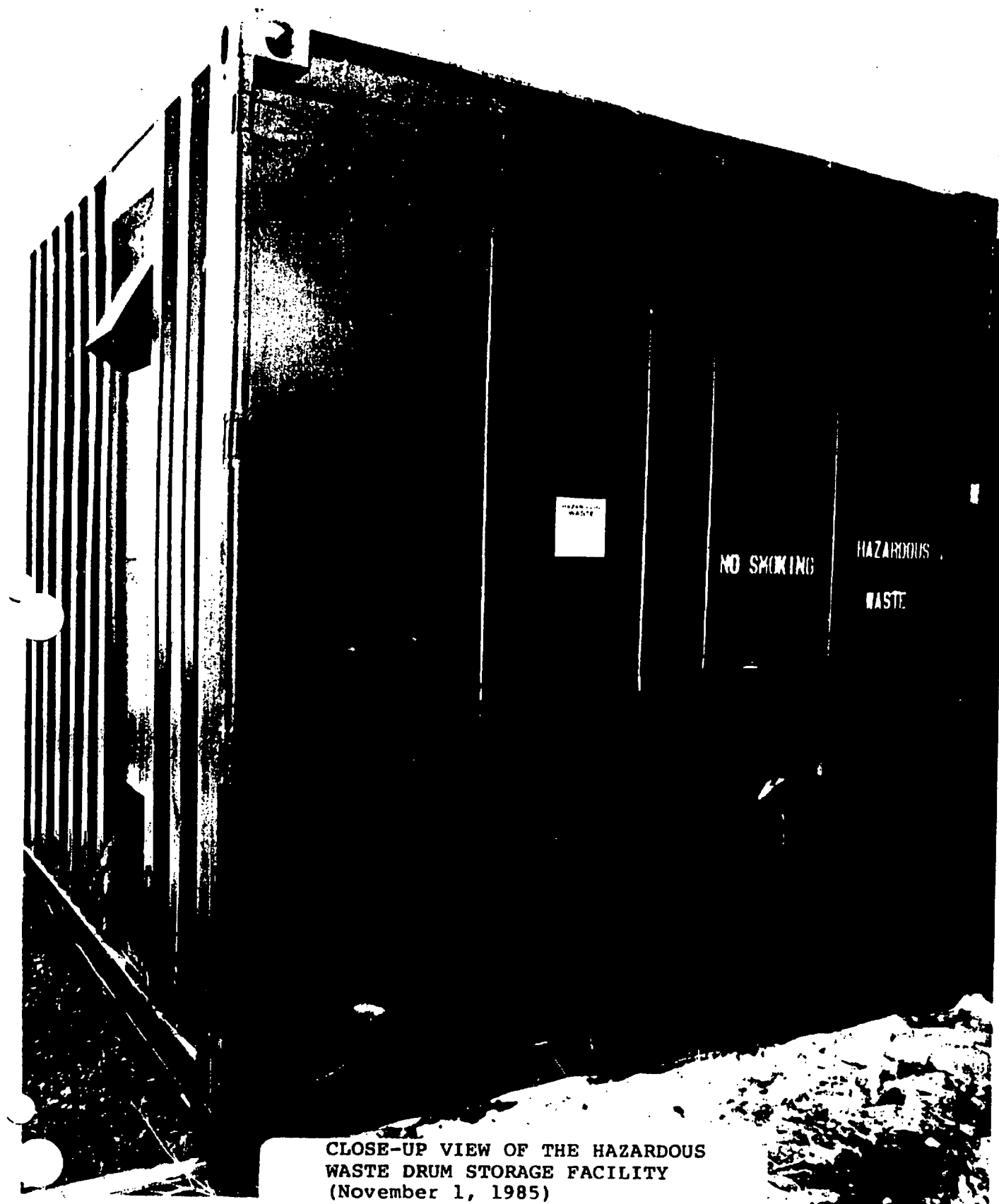
INTERIOR VIEW OF THE TOXIC
GAS STORAGE FACILITY
(November 1, 1985)

OVERALL VIEW OF THE HAZARDOUS
WASTE DRUM STORAGE FACILITY
(November 1, 1985)

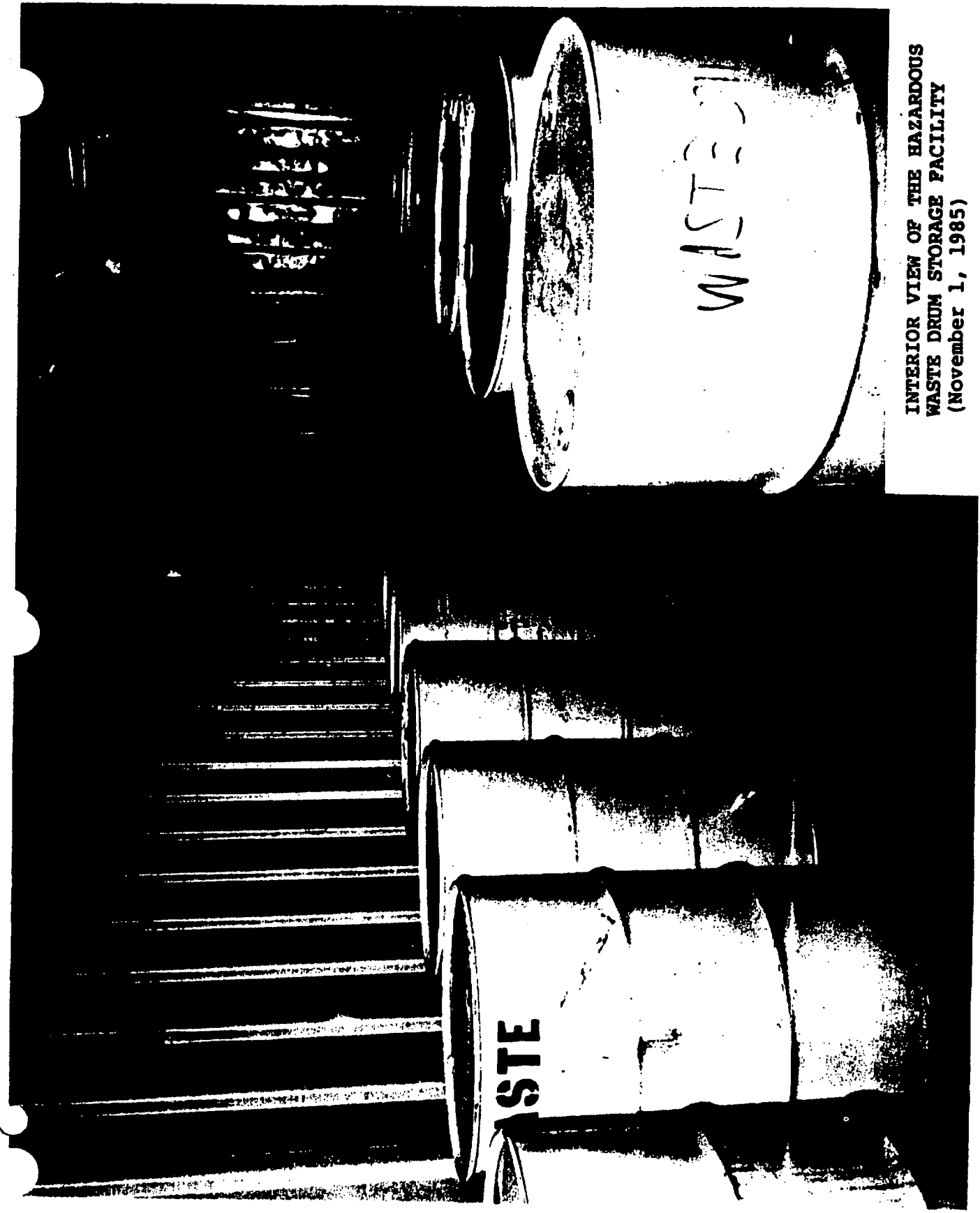




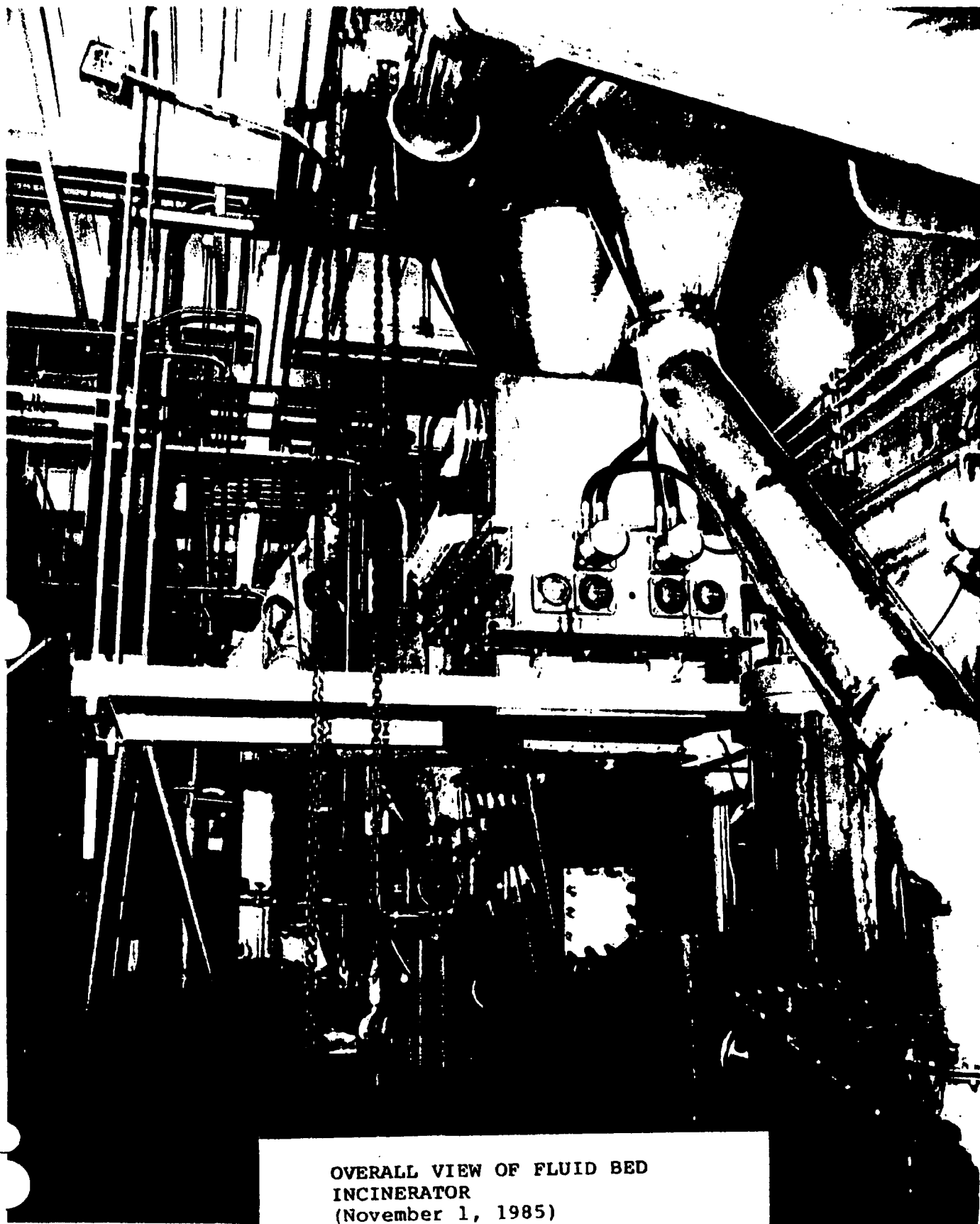
VIEW SHOWING VENTILATION
OF CONTAINERS
(November 1, 1985)



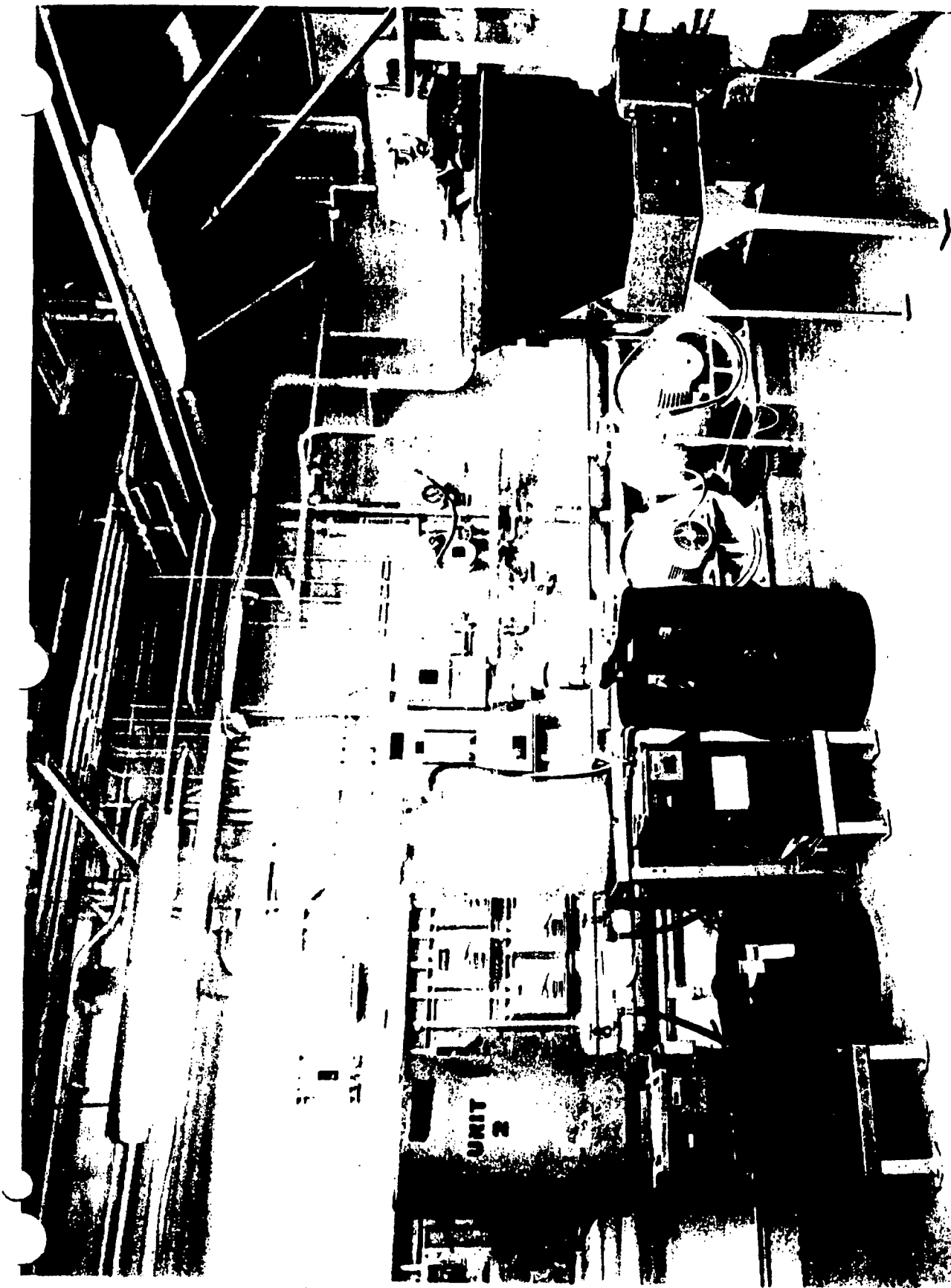
CLOSE-UP VIEW OF THE HAZARDOUS
WASTE DRUM STORAGE FACILITY
(November 1, 1985)



INTERIOR VIEW OF THE HAZARDOUS
WASTE DRUM STORAGE FACILITY
(November 1, 1985)



OVERALL VIEW OF FLUID BED
INCINERATOR
(November 1, 1985)



SILVER RECOVERY PROCESS AREA
(November 1, 1985)



SOLIDIFIED AND BOXED
ELECTROCHEMICAL MILLING SLUDGE
(November 1, 1985)

COD078343407

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Revision No.: 0
B

B - FACILITY DESCRIPTION

SECTION B
FACILITY DESCRIPTION

This section provides a general description of the Rocky Flats hazardous waste management facility. This description is intended to acquaint the permit application reviewer and permit writer with an overview of the facility. More complete details can be found in other sections of this permit application.

B-1 General Description (40 CFR 270.14 (b)(1); CHWR 100.41 (a)(1))

B-1a Facility Name

United States Department of Energy Rocky Flats Plant

B-1b Facility Contact

J. L. Bellows, Acting Area Manager
Phone: 303-966-2025

B-1c Facility Mailing Address

P.O. Box 928
Golden, Colorado 80402

B-1d Facility Location

The Rocky Flats Plant covers almost 11 square miles of Jefferson County, Colorado. The facility is centered at 105° 11' 30" west longitude, 39° 53' 30" north latitude. As shown in Figure B-1, this location is 16 miles northwest of Denver and 9 to 12 miles from the communities of Boulder, Golden, and Arvada. It is bounded on the north by State Highway 128, on the west by State Highway 93, on the south by State Highway 72, and on the east by Jefferson County Highway 17. Figure B-2 is a map of the immediate vicinity of the Rocky Flats Plant. The legal boundaries of the Plant property are shown in Figure B-3.

Situated at an elevation of about 6,000 feet, the Plant is on the eastern edge of a geological bench known locally as Rocky Flats. This rocky bench, which is about 5 miles wide in an east-west direction, flanks the eastern edge of the abruptly rising foothills of the Rocky Mountains. The Continental Divide is approximately 26 miles west of the Plant.

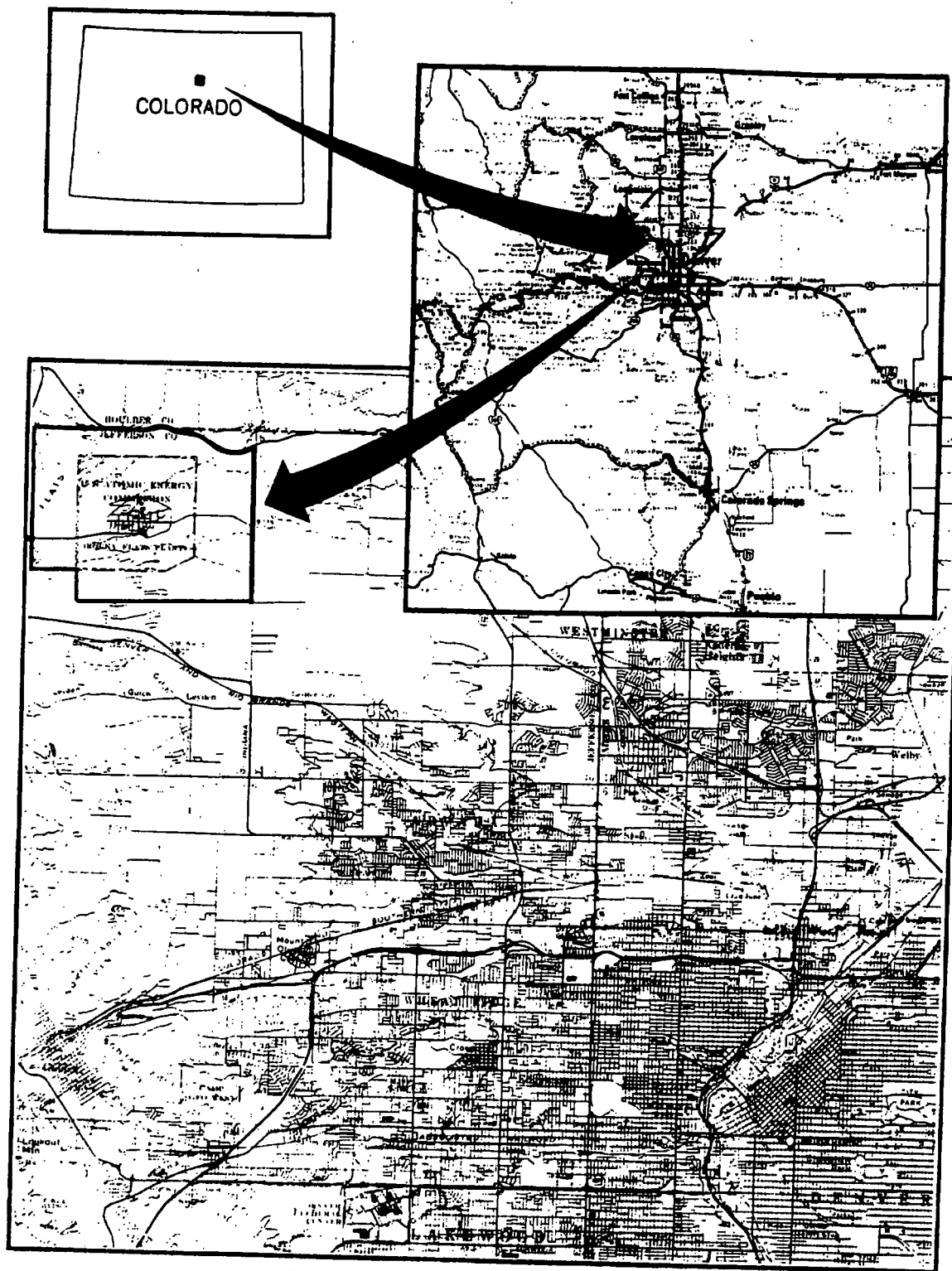


FIGURE B-1 GENERAL LOCATION

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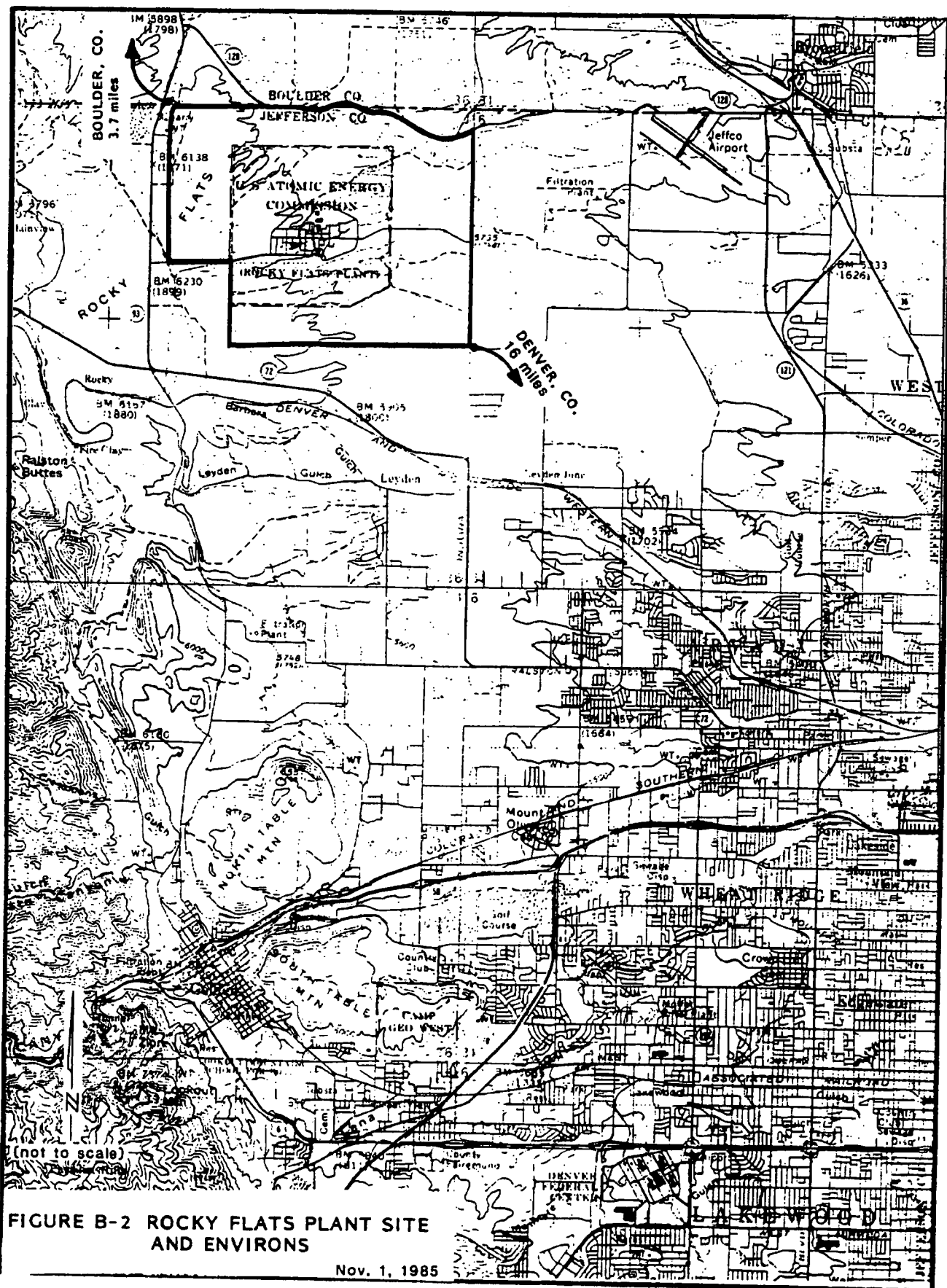


FIGURE B-2 ROCKY FLATS PLANT SITE AND ENVIRONS

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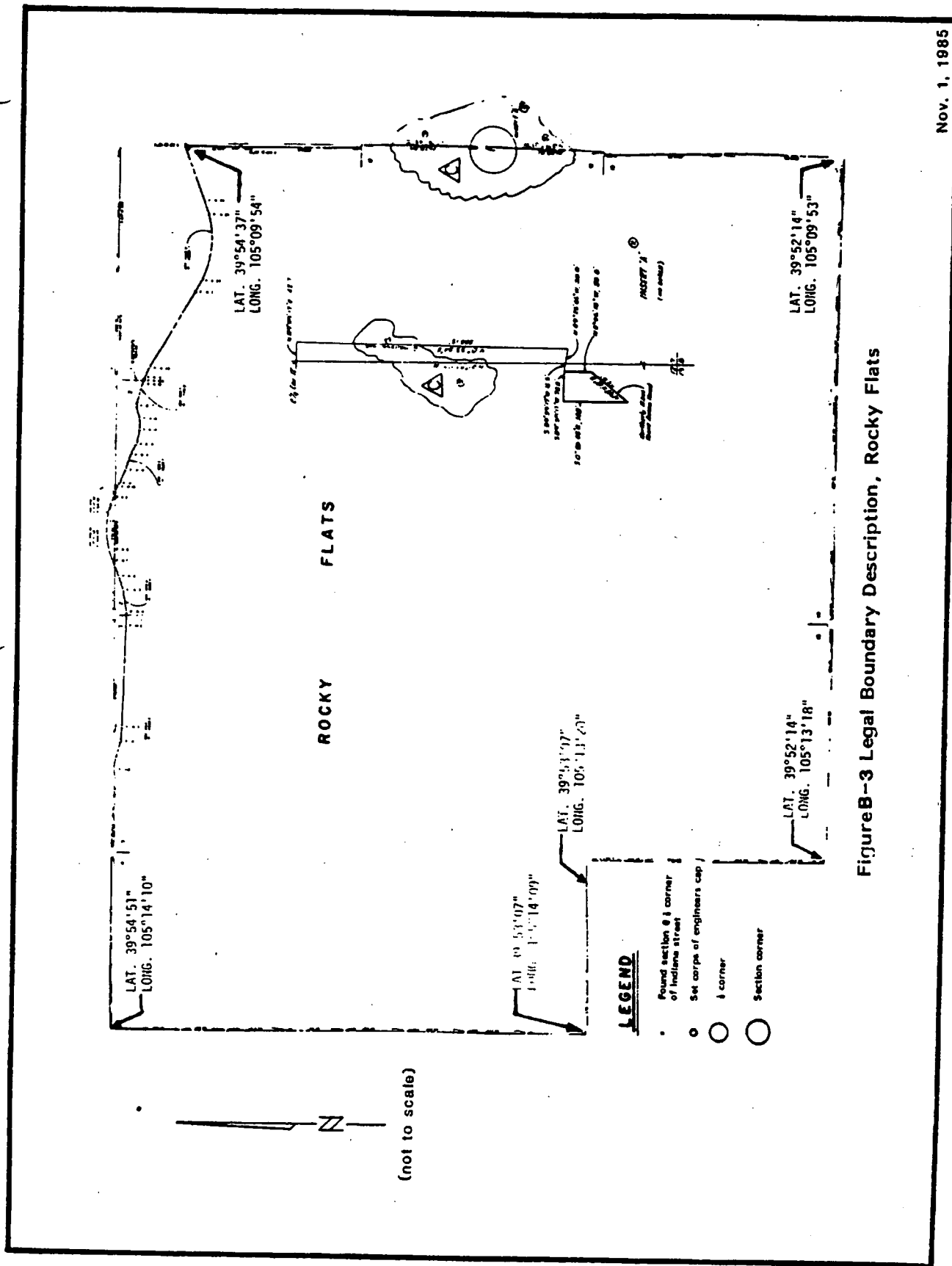


Figure B-3 Legal Boundary Description, Rocky Flats

B-1e Nature of Business

The Rocky Flats Plant is a Government-owned facility with the primary mission of producing plutonium components for nuclear weapons. Production activities involve the fabrication of plutonium, uranium, beryllium, and stainless steel parts. Other activities include chemical processing to recover plutonium from scrap material, R&D work in metallurgy, machining, assembly, nondestructive testing, coatings, remote engineering, chemistry, and physics. Parts made at the Plant are shipped elsewhere for final assembly.

B-1f Brief Description of Processes Involved in Generation of Hazardous Wastes

Production activities include metal fabrication and assembly, chemical recovery and purification of process-produced transuranic radionuclides, and related quality control functions. Research and engineering programs supporting these activities involve chemistry, physics, materials technology, ecology, nuclear safety, and mechanical engineering.

Approximately 102 structures on the Plant site contain about 214,000 square meters (2.29 million square feet) of floor space. Of this space, major manufacturing, chemical processing, plutonium recovery, and waste treatment facilities occupy about 170,000 square meters (1.83 million square feet).

Major laboratory and research buildings occupy about 13,850 square meters (149,000 square feet). The remaining floor space is divided among administrative, utility, security, warehouse storage, and construction contractor facilities.

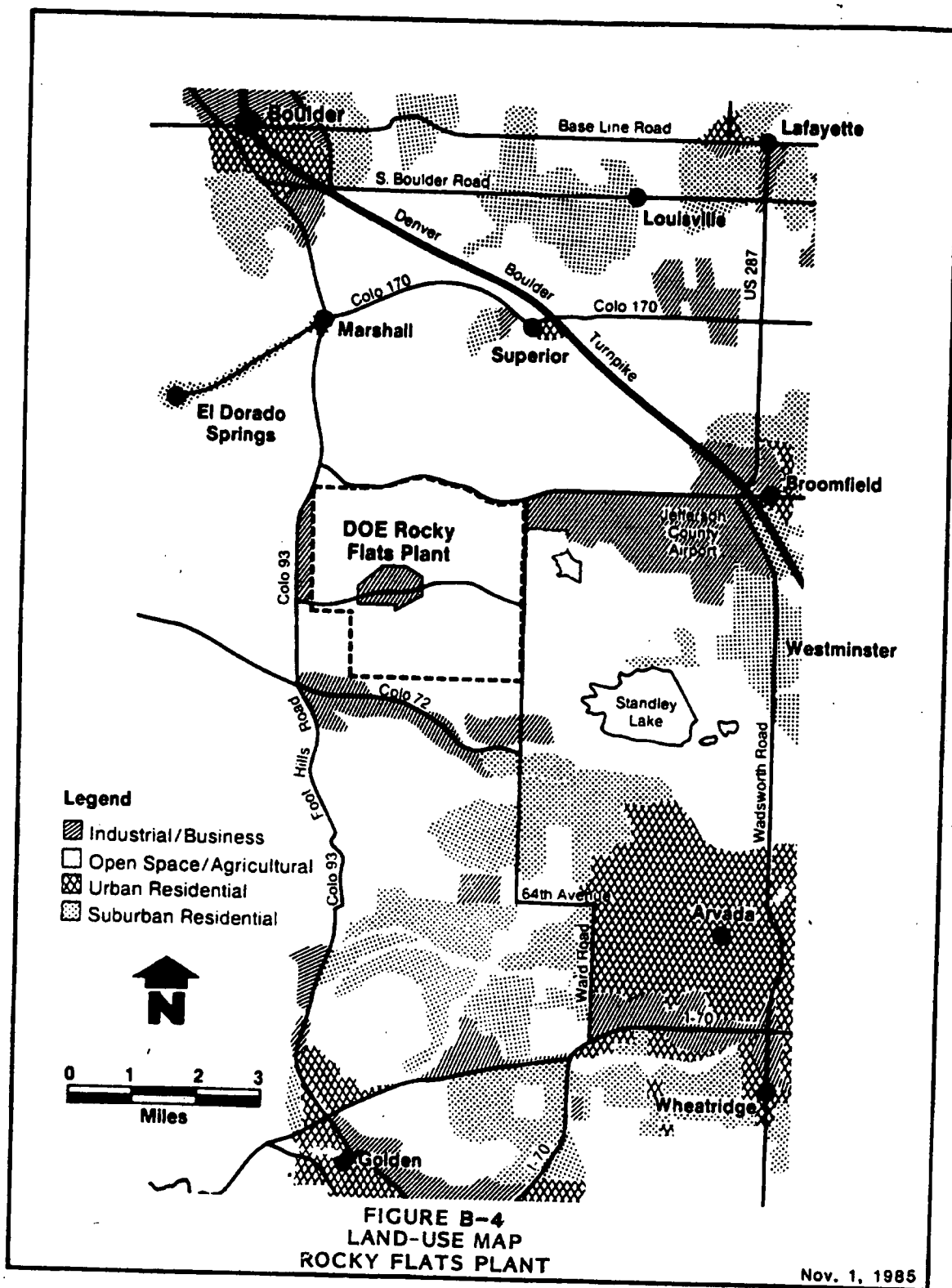
B-2 Topographic Map (40 CFR 270.14 (b)(19))

B-2a General Requirements

The topographic map presented as Figure B-2 shows the Rocky Flats Plant site, facility boundaries, and contiguous areas surrounding the facility at a distance of over 1,000 feet around the Plant property boundary. The scale is 1 inch = 2000 feet.

Land Uses: Land use plans and zoning maps were acquired for Adams, Boulder, and Jefferson counties and for the cities of Arvada, Broomfield, Golden, Westminster, and Wheat Ridge. The general area of interest was reviewed and a composite land use planning map was developed from the above sources. The composite land use map is presented in Figure B-4.

Surface Waters, Drainage Patterns, Controls: Five Streams occur near the Rocky Flats Plant site. Of these, North Walnut Creek, South Walnut Creek, and Woman Creek drain the Rocky Flats Plant site; all of these are intermittent wet weather creeks. The other two streams in the area are Coal Creek and Rock Creek. North Walnut Creek and South Walnut Creek flow eastward into Great Western Reservoir. Great Western Reservoir supplies water to the City of Broomfield. Woman Creek originates west of the Plant, drains the south portion of the Plant site, and flows eastward into Standley Lake. Standley Lake provides irrigation storage and the municipal water supply for the City of Westminster. Coal Creek has its headwater in the Front Range and is the largest stream near the Plant. Coal Creek and Rock Creek drain the area north of the Plant. The Rocky Flats site and environs drainage pattern and the location of streams is shown in Figure B-5.



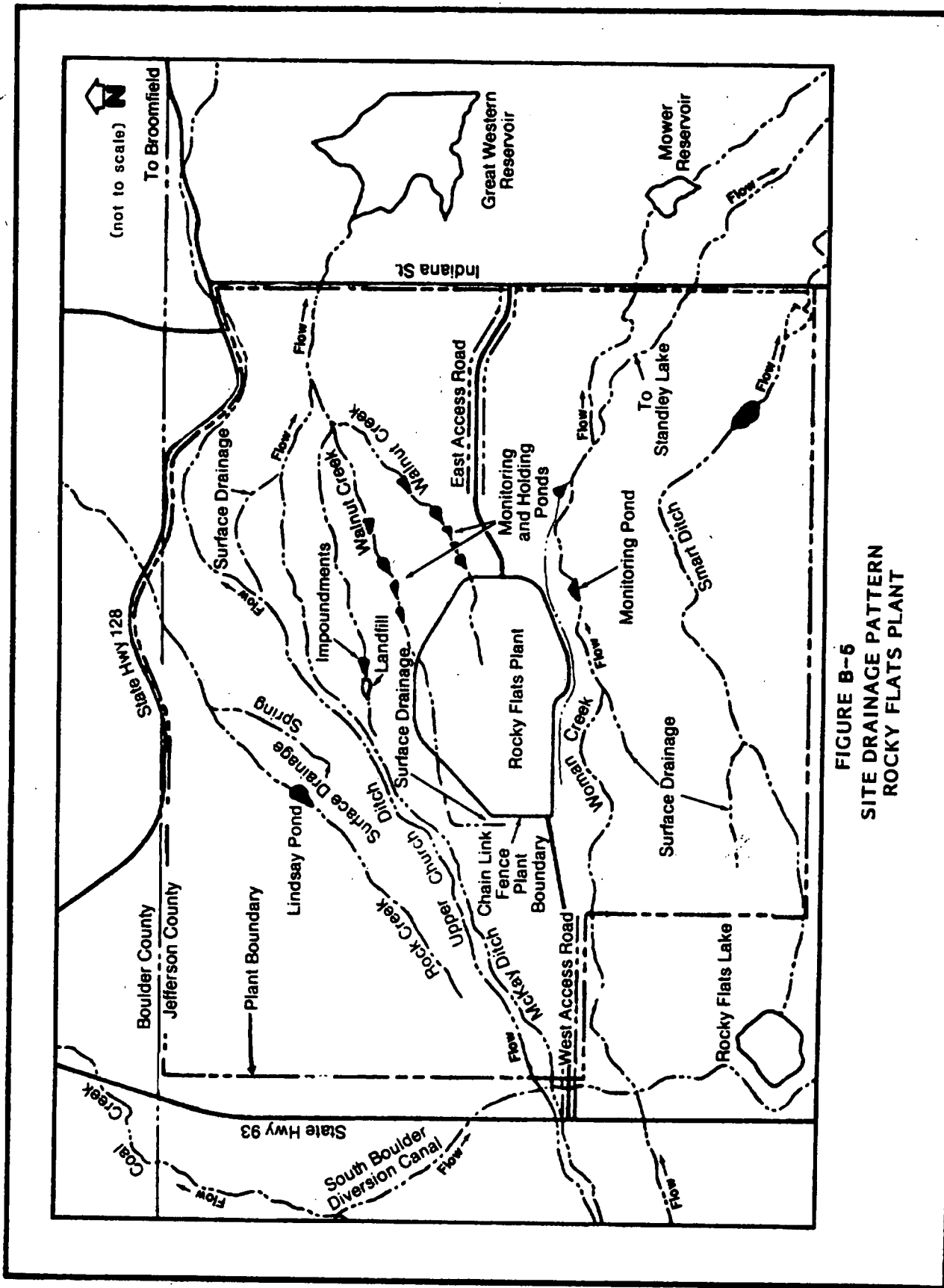


FIGURE B-6
SITE DRAINAGE PATTERN
ROCKY FLATS PLANT

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Figure B-6 presents in greater detail the monitoring and holding ponds which are associated with controlling surface water discharges from the Plant site. Additionally, these ponds are integral parts of emergency facilities and are discussed later in Sections F and G.

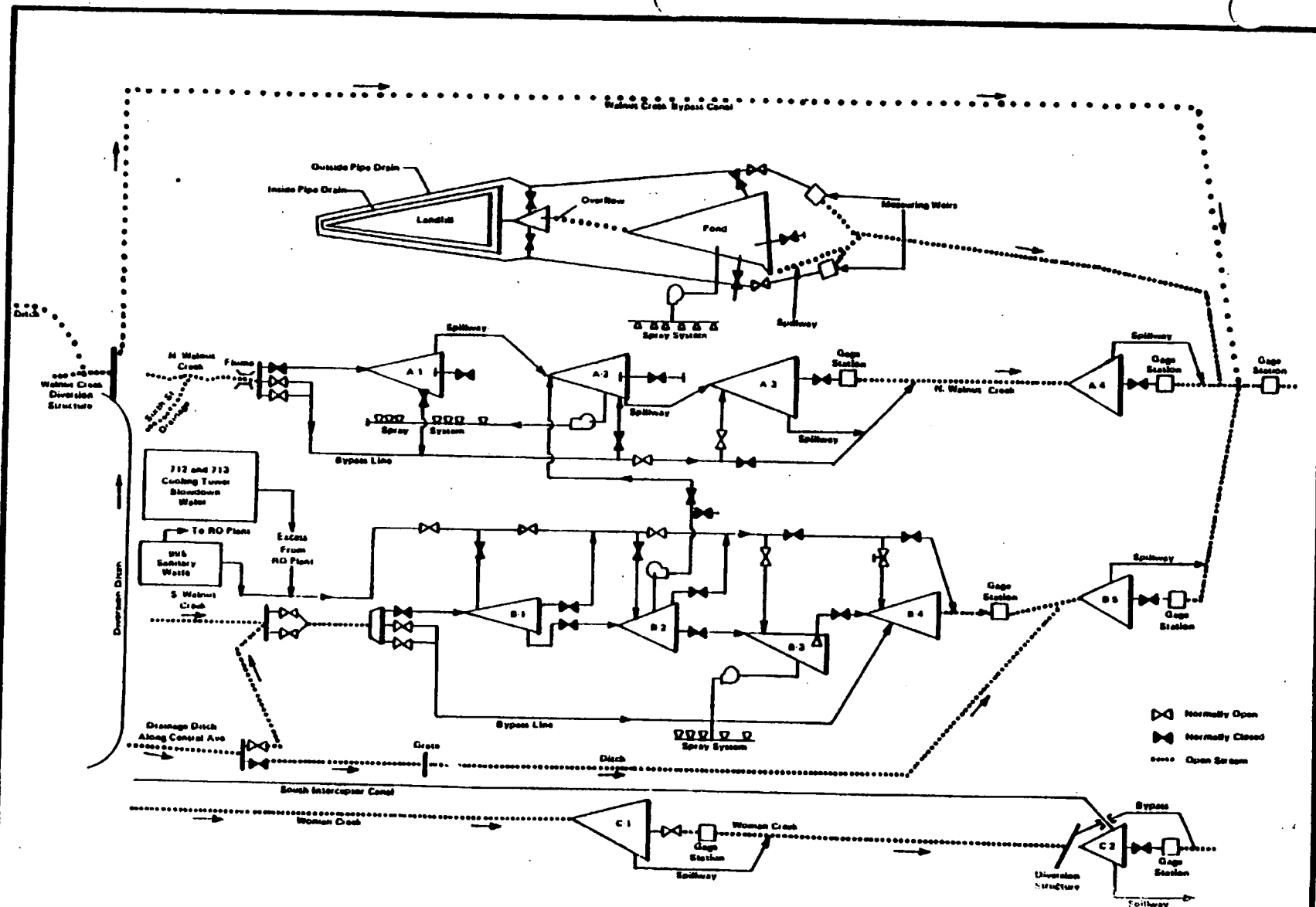
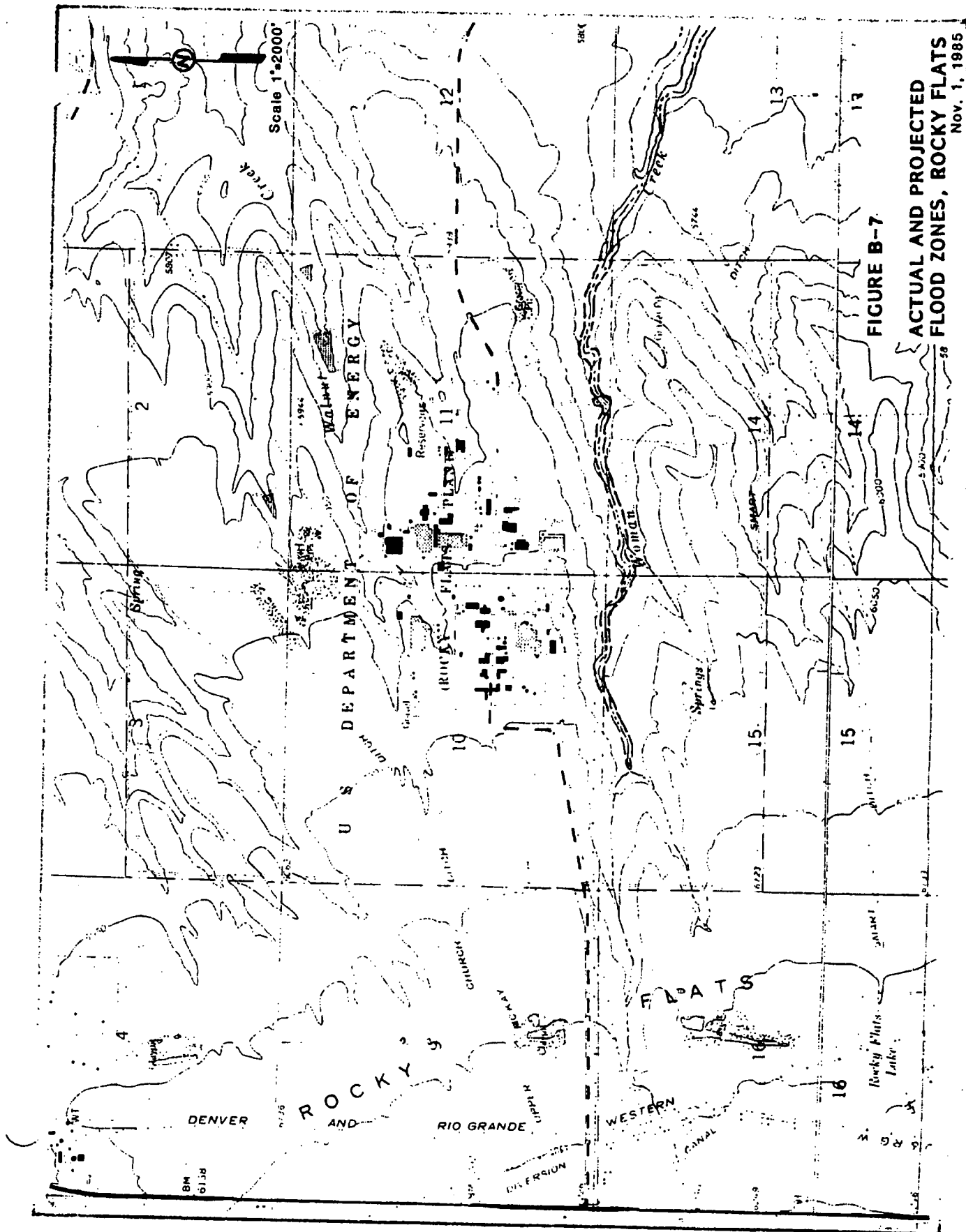


FIGURE B-6 · HOLDING POND SCHEMATIC.

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Flood Plain: Woman Creek flows easterly along the southern portion of the Rocky Flats site. The portion of the creek flowing through the Plant site is not included on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map. However, it is clear that Plant facilities are well out of the 100-year flood plain for Woman Creek if the flood plain is extended through the property. Figure B-7 is a representation of the designated 100-year flood plain as well as the hypothetical extension of the flood plain.

Groundwater and Hydrogeology: Hazardous wastes at the Rocky Flats Plant are not disposed of on-site; rather the wastes are stored prior to reuse, recycling and/or shipping off-site for disposal and are exempt from groundwater monitoring requirements as stated in 264.90, 264.1 and 261.6(a)(2).



Hazardous Waste Management Facility Boundary: Figure B-8 shows the locations of hazardous waste management units on the Plant site.

Injection and Withdrawal Wells: The site has no injection wells for waste disposal or withdrawal wells for water supply. Wells for monitoring groundwater and geohydrologic conditions at the Plant site are situated at various locations throughout the Plant site.

Access Control: The entire site is surrounded by a three-strand cattle fence. The high security area of the site is surrounded by a 6-foot high chain link fence, topped by 2 feet of three-strand barbed wire. Entrance ways are patrolled 24 hours per day. Figure B-9 shows the locations of fences and gates as well as access and internal roads.

Buildings and Structures: The locations of existing buildings or structures, paved or unpaved parking areas, fences, railroad tracks, and underground structures are shown in Figure B-8 and Photograph in Section A. An on-site grid system is also presented.

Plant buildings are concentrated in a small area (384 acres) surrounded by a security fence. Land between that fence and the site boundaries, encompassing 6,166 acres, serves as a buffer zone between the Plant and the public. A cattle fence on the site perimeter is posted to identify the land as a restricted area. Developments in the buffer zone include firebreaks, holding ponds on three watercourses, environmental monitoring stations, a sanitary landfill area, salvage yard, power lines, inactive gravel pits, target range, and access roads.

Two access roads, one from State Highway 93 to the west and one from County Highway 17 to the east, pass through the security fence that encircles the main area of the Plant. Within this central facility are about 100 buildings, none over three stories above the ground. Plant visibility from nearby highways varies, depending on a viewer's location. The most prominent structures are the 200-foot meteorological tower, 155-foot water tower, three building stacks measuring, respectively, 69, 98, and 151 feet in height, and the new plutonium recovery and waste treatment facility.

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As shown in Figure B-8, the Plant is divided into several areas constituting separate operational complexes. Each building within an area is identified by a three-digit number; the first digit signifies the area in which the specific building is located. There is no 200 area as such. Numbers in the 200 series are applied to miscellaneous facilities that are distributed throughout the Plant site. Examples are utility structures and parking lots. The major production complexes are in the 400, 700, and 800 areas.

Recreation Areas: Public lands are located adjacent to the Plant on the east boundry. Currently there are no recreational facilities on these lands.

Storm and Sanitary Sewers and Utilities: Sanitary waste lines collect human wastes and convey them to the sanitary waste (sewage) treatment plant. Effluents from the sewage plant flow into holding ponds which are monitored on a regular basis. Sanitary wastewater is kept separate from all process wastewaters and is routinely monitored. Water for domestic use, process uses, and fire-fighting is provided by the Denver Water Board.

Rocky Flats has ditches, culverts, and underground pipes for collecting and controlling surface water runoff. Surface water runoff from inside the security fence leaves the plant through North and South Walnut Creek drainage ways and Walnut Creek. These waters are monitored prior to discharge.

Wind Rose: Wind, temperature, and precipitation data were collected on the Plant site during 1984. Table B-1 presents the 1984 annual summary of the percent frequency of wind directions (16 compass points) divided into four speed categories. The compass point designations indicate the true bearing when facing against the wind. These frequency values are represented graphically in Figure B-9. The wind rose vectors also represent the bearing against the wind (i.e., wind along each vector blows toward the center). The predominance of northwesterly winds is typical of Rocky Flats. The low frequency of winds greater than 7 meters per second (15.6 mph) with easterly components is also normal.

TABLE B-1. Wind Direction Frequency (Percent), by
Four Wind-Speed Classes, at the Rocky Flats Plant

(Fifteen-Minute Averages --1984a)						
	Calm	1-3 (m/s) ^b	3-7 (m/s)	7-15 (m/s)	15 (m/s)	TOTAL
-	0.81	-	-	-	-	0.81
N	-	2.68	3.47	1.03	0.00	7.18
NNE	-	2.98	2.08	0.45	0.00	5.51
NE	-	2.66	1.21	0.07	0.00	3.94
ENE	-	2.25	0.55	0.01	0.00	2.80
E	-	2.50	0.51	0.01	0.00	3.02
ESE	-	2.69	1.49	0.02	0.00	4.21
SE	-	3.13	2.73	0.03	0.00	5.89
SSE	-	3.04	3.53	0.14	0.00	6.71
S	-	3.07	3.66	0.16	0.00	6.89
SSW	-	3.08	3.21	0.11	0.00	6.40
SW	-	3.07	2.87	0.18	0.00	6.11
WSW	-	3.03	3.85	0.58	0.00	7.46
W	-	3.08	3.01	1.22	0.30	7.61
WNW	-	2.74	4.24	3.46	0.55	10.98
NW	-	2.46	3.70	1.64	0.03	7.83
NNW	-	2.13	3.95	0.56	0.00	6.64
TOTALS	0.81	44.59	44.07	9.65	0.87	100.00

^aData obtained from sensors located ~ 10m (33 ft) above the ground.

^bFor conversion purposes, miles per hour (mph) equals 2.237 multiplied by meters per second (m/s).

Fire Control Facilities: The Rocky Flats Plant maintains a completely self-contained Fire Department with permanent staff and equipment on-site. As a unit of the Plant and Security Department, the Fire Department is responsible for:

1. Answering any fire alarm and extinguishing any fire.
2. Responding to any hazardous waste spill.
3. Performing preventive maintenance inspections of all buildings and areas within the Plant site for potential fire hazards.
4. Ensuring the proper maintenance of fire fighting equipment at the Central Fire Station and other equipment located throughout the Plant.
5. Maintaining the classroom and field education and training program in fire-fighting techniques and first aid and providing other specialized training.
6. Providing mutual aid to surrounding metropolitan communities, if requested and approved through the DOE.
7. First aid responses

The Fire Department has 25 members who provide 24-hour service on a platoon schedule. As additional support, volunteer employees in manufacturing buildings comprise Fire Brigades.

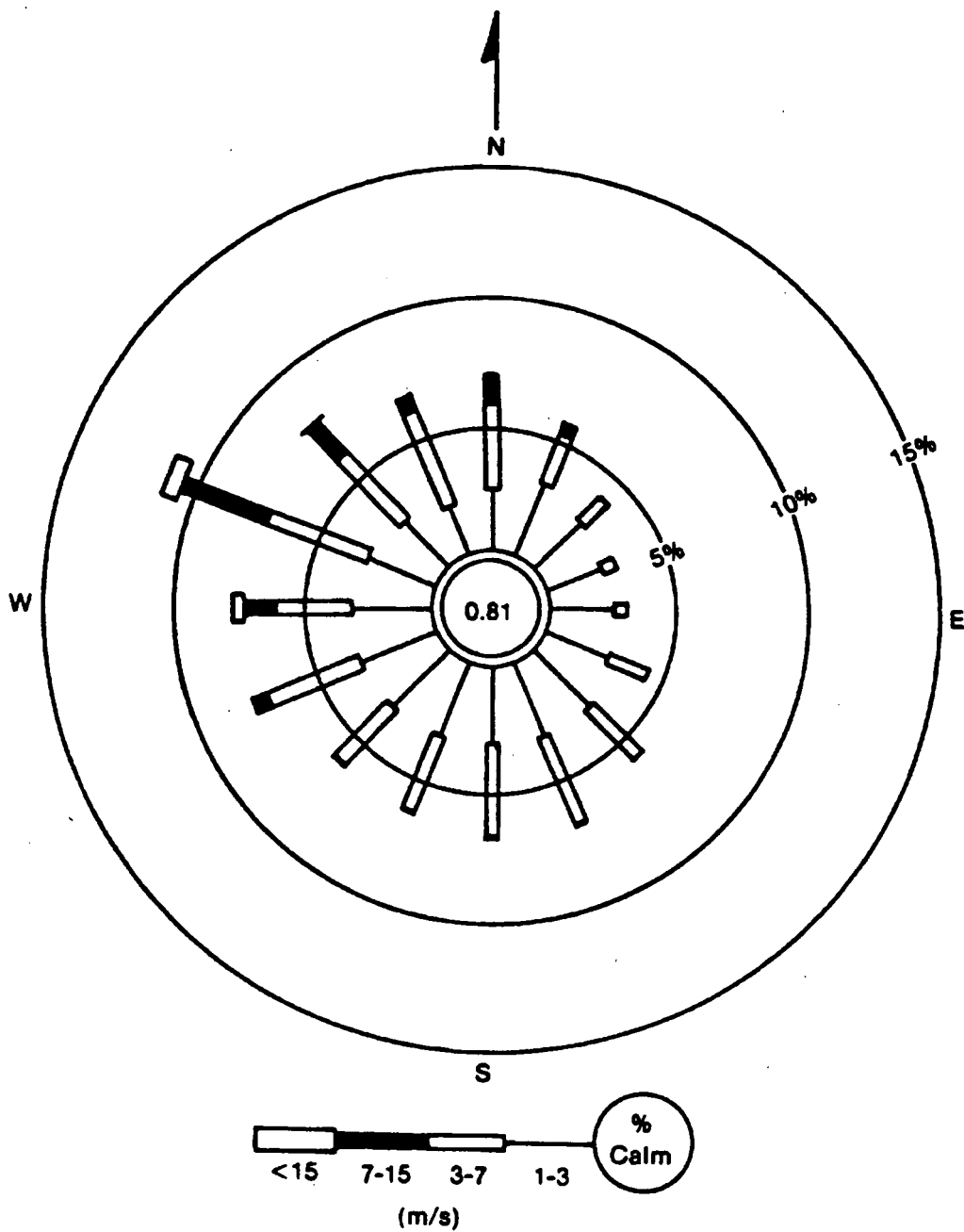


FIGURE B-9
1984 ANNUAL WIND ROSE FOR THE
ROCKY FLATS PLANT

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The Fire Department equipment consists of:

1. Two pumper trucks.
2. One water tanker truck.
3. One fully equipped ambulance.
4. One fully equipped rescue vehicle.
5. One "brush" truck, used primarily for grass fires.
6. Two general purpose vehicles.

Plant buildings are equipped with various types of fire detection and extinguishing equipment. Major buildings are equipped with sprinkler systems. All members of the Fire Department receive continuous training in fire-fighting techniques and response to hazardous material spills. Members are also trained in first aid procedures and as Emergency Medical Technicians (EMT) for health and safety purposes related to possible accidents.

Water Supplier: Raw water is purchased from the Denver Water Board and is drawn from the Ralston Reservoir and the South Boulder Diversion Canal. The Rocky Flats Plant used approximately 477 million liters (126 million gallons) of water during 1984.

Electric and Gas Utilities: All of the Plant's heating requirements are met by in-plant steam boilers that normally use natural gas and are capable of using low-sulfur fuel oil. During Calendar Year 1984, approximately 21.9 million cubic meters (775 million cubic feet) of natural gas were used. Ninety-one thousand liters (24,000 gallons) of fuel oil were used during 1984.

B-3 Location Information (40 CFR 270.14 (b)(11); CHWR 100.41(a)(1))

B-3a Seismic Considerations

B-3a(1) Tectonic History

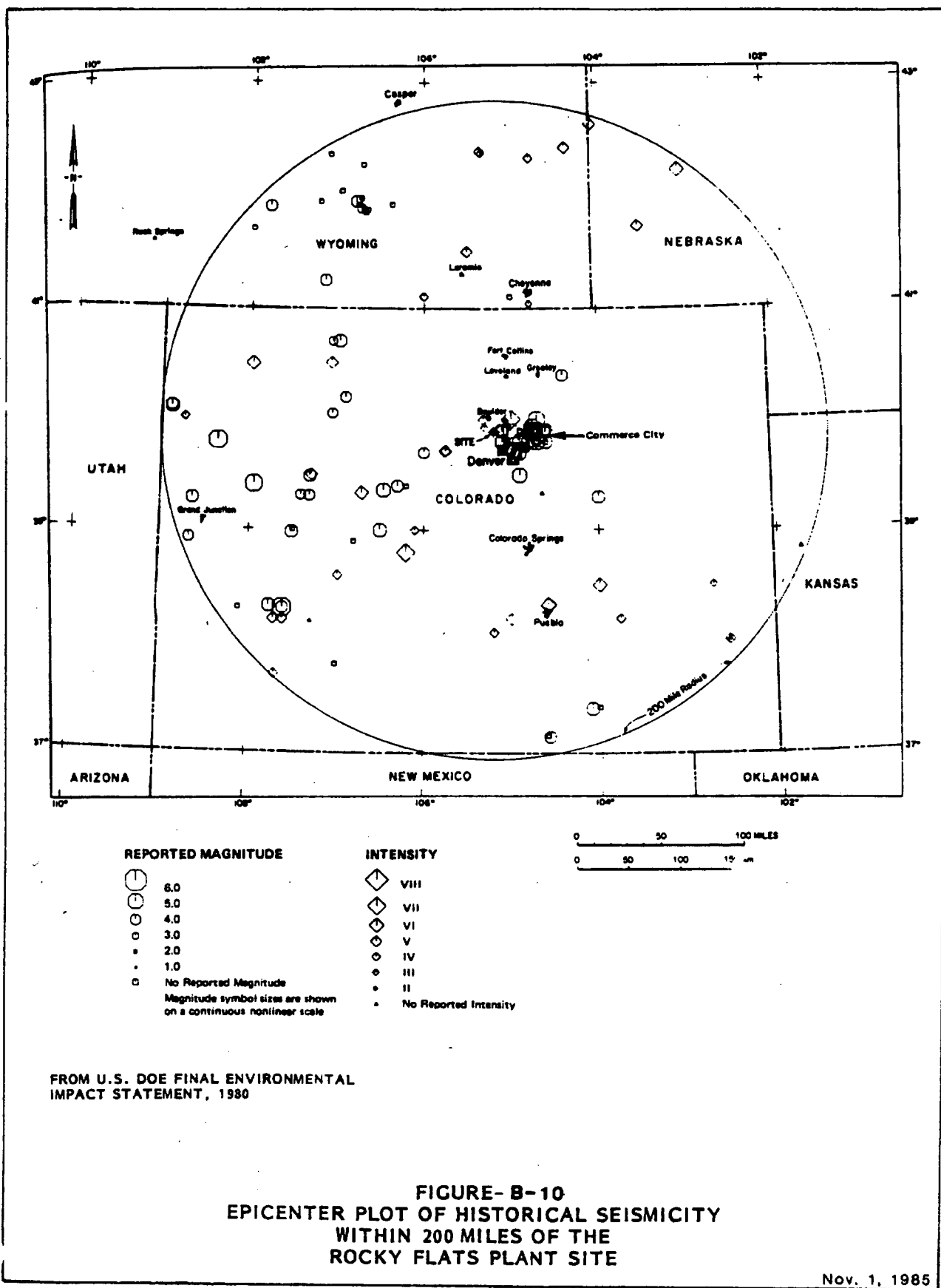
The Rocky Flats Plant site is located about 4 miles east of the Front Range Foothills in the Colorado Piedmont Section of the High Plains. The predominant geologic structure in this area is the Front Range Monocline which forms the western limb of the Denver Structural Basin. North trending hogback ridges along the west side of the Monocline are formed by steeply dipping overturned sedimentary beds. These sedimentary beds are flanked in the west by the Precambrian crystalline terrain of the Front Range Uplift and on the east by the gently dipping sedimentary beds of the Denver Structural Basin. The Golden Fault, a large reverse fault, cuts the Front Range Monocline about 2 miles southwest of the Rocky Flats Plant site. This fault extends about 17 miles to the south. The stratigraphic throw on the Golden Fault is reported to be about 9,000 feet (Dames and Moore, 1981).

The majority of the displacement on the Golden Fault, the uplift of the Front Range, and subsidence of the Denver Basin occurred during the late Cretaceous to early Eocene Laramide Orogeny about 40 to 70 million years ago. Erosion during the Laramide Orogeny is believed to have kept pace with uplift and the Front Range probably never stood very high above the Denver Basin during the Orogeny. By the late Eocene an erosional surface of low relief covered much of the Rocky Mountain Region.

The present rugged topography to the west of the Rocky Flats Plant site is the result of Post-Laramide tectonics and erosion. About 5,000 to 10,000 feet of uplift has taken place in the Rocky Mountain Region since the early Miocene about 25 million years ago. Late Tertiary block faulting is believed to have accompanied the regional uplift as indicated by apparent displacements of the late Eocene erosional surface (Scott, 1975, Epis and Chapin, 1975). There is some evidence that block faulting has continued into the Quaternary (Scott, 1970, Whitkind, 1976, and Kirkham and Rogers, 1981).

B-3a(2) Historic Seismicity

Historically, seismicity in Colorado has been relatively low. The first reported earthquake occurred in 1870. Of the earthquakes recorded during the historical period, only three with Modified Mercalli intensities greater than VI have occurred within 200 miles of the Plant site. These larger earthquakes were reported on



November 8, 1882, November 15, 1901, and August 9, 1967. Figure B-10 shows historical earthquakes that have occurred within 200 miles of the Rocky Flats Plant.

A great deal of speculation has been centered about the location and size of the November 8, 1882 earthquake. Hadsell (1968) assigned an intensity VII to the 1882 earthquake and placed the epicenter north of Denver about 13 miles northeast of the Rocky Flats Plant site. Earlier studies reported the epicenter near Vail Pass about 100 miles west of the Rocky Flats Plant site. Re-examination of available historic data by Dames and Moore (1981), which relied primarily on newspaper accounts, was done in an attempt to better understand the 1882 earthquake. The Dames and Moore study suggests a tentative epicenter in northwestern Colorado about 170 miles northwest of the Rocky Flats Plant site and assigned a local magnitude range of 6.0 to 7.0 to the 1882 earthquake which would correspond to a epicentral intensity of about VII-VIII. The 1882 earthquake caused intensity VI-VII ground shaking in the Denver area which is similar to the ground shaking caused by the August 9, 1967 Derby earthquake discussed below.

On November 15, 1901, a strong earthquake was reported near Buena Vista, Colorado. This earthquake was located about 90 miles southwest of the Rocky Flats Plant site and had a epicentral intensity of VI-VII.

From April 1962 through June 1972, over 1,800 earthquakes occurred in the Derby area about 30 miles east of the Rocky Flats Plant site. The Derby earthquakes were near a deep waste disposal well on the Rocky Mountain Arsenal. The earthquake activities started soon after initiation of pumping in the disposal well. Subsequent investigations of the Derby earthquake sequence supports the hypothesis that the earthquakes resulted from the release of natural tectonic stresses by increases in hydrostatic fluid pressures as a result of pumping (Healy and others, 1966; Major and Simon, 1968; and Hsieh and Bredehoeft, 1981). The largest Derby earthquakes, with magnitudes greater than 5.0, occurred about one and one-half years after the pumping stopped in February 1966. After 1967, the number of Derby earthquakes has declined and the present indication is that the swarm of activity that occurred between 1962 and 1967 has virtually disappeared (Hsieh and Bredehoeft, 1981). The largest earthquake in the Derby swarm had a local magnitude of 5.3 and occurred on August 9, 1967. The epicenter of this earthquake was located about 26 miles east of the Rocky Flats Plant site. This earthquake resulted in intensity VI-VII ground shaking in the epicentral region and intensity VI ground shaking occurred at the Rocky Flats Plant site.

B-3a(3) Quarternary Faulting

In 1981, extensive studies were done to evaluate the Quarternary history of the Golden Fault and other faults at the Rocky Flats Plant site and vicinity (Dames and Moore, 1981).

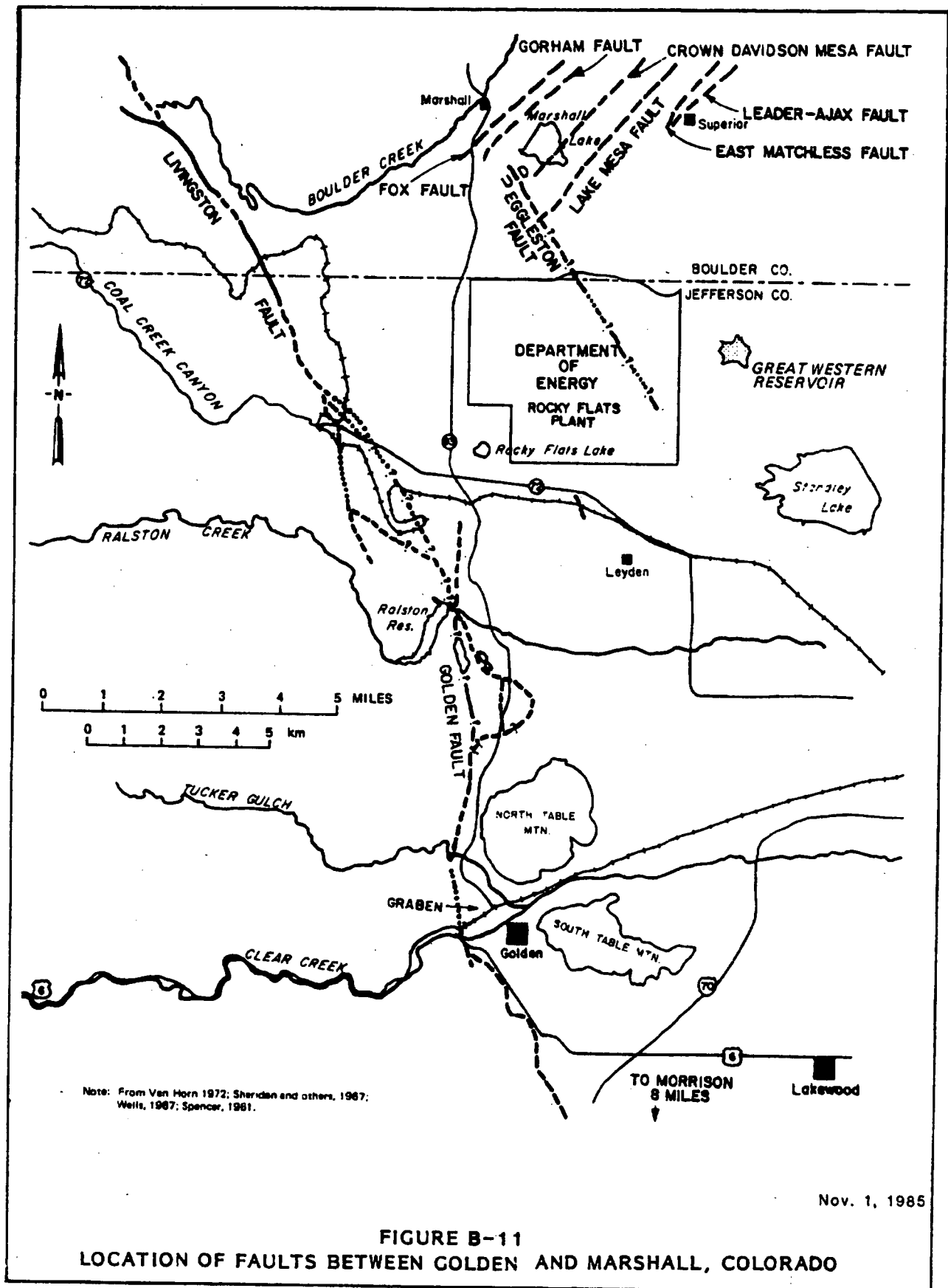
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— The Golden Fault studies did not produce any compelling evidence of tectonic activity along the Golden Fault with in the past 500,000 years and the fault does not have surficial expressions characteristic of geologically young fault zones. Some of the exploratory trenches encountered anomalous "tongues" of bedrock extending into the overlying alluvium along the fault zone. The mechanisms responsible for the bedrock "tongues" has not been clearly established. Both tectonic and nontectonic processes have been proposed; however, regardless of their origin, the bedrock "tongues" certainly appear to have been produced by processes associated with very slow rates of deformation (Dames and Moore, 1981).

A graben structure is located north of Golden and about 800 feet to the east of the Golden Fault. The Colorado Geological Survey studied the graben in 1976 and concluded that the graben is part of the Golden Fault structural zone and is characterized by at least two episodes of fault movement since the Yarmouth or within the last 600,000 years (Kirkham and Rogers, 1981). Dames and Moore (1981) performed extensive studies of the graben but were unable to develop sufficient evidence to conclusively determine if the graben is the result of tectonic or nontectonic processes. Based on the overall study of the Golden Fault, that it is unlikely that the graben is tectonically or structurally related to the Golden Fault, and in their judgement, the graben was more likely formed in response to nontectonic processes.

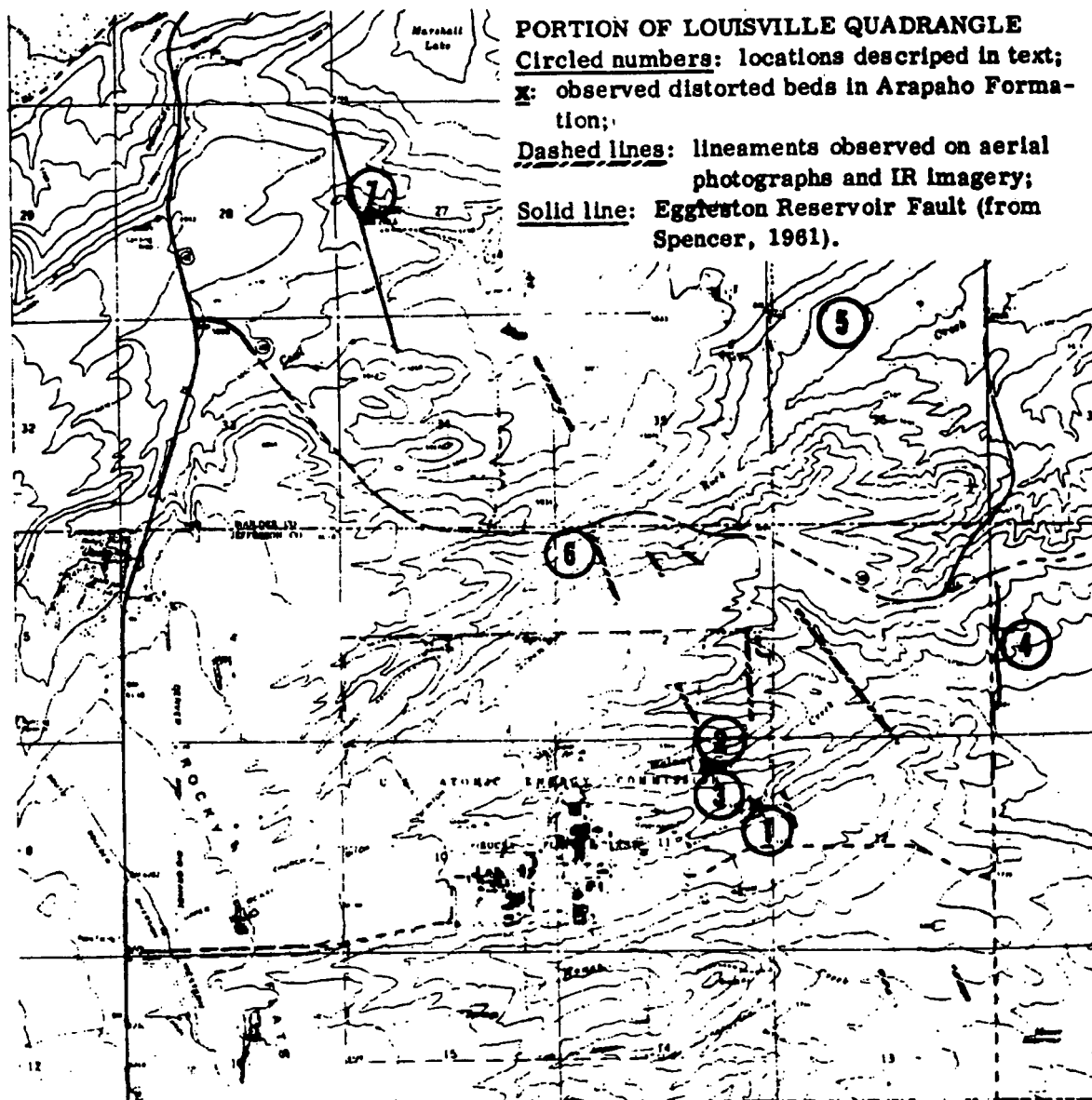
The northwest trending Eggleston fault, mapped by Spencer (1981) to one mile south of the Eggleston Reservoir, located approximately three miles north-northwest of the Rocky Flats Plant site, was later given a different orientation by Hurr (1976). Hurr believed the fault trended more to the northwest and passed 1/2 mile east of the Plant site (see Figure B-11). This was based on 1975 and 1976 field investigations by Hurr when three features, suggestive of possible fault control, aligning in a northwesterly direction with the Eggleston fault were identified. These features are No. 1, 2 and 6 (shown in Figure B-12).

Feature No. 1, located south of holding ponds B-3 and B-4, shows displacement of bedrock units in a deeply eroded drainage channel on South Walnut Creek. Dames and Moore's 1980 investigation showed no evidence of lateral continuation of the displacement. Excavation studies in 1980 revealed bedrock displacements, but a noted downward decrease in dip of the fault plane suggested a possible landslide origin.



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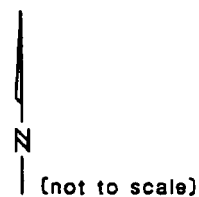
FIGURE B-11
 LOCATION OF FAULTS BETWEEN GOLDEN AND MARSHALL, COLORADO



FROM U.S. DOE FINAL ENVIRONMENTAL
IMPACT STATEMENT, 1980

**FIGURE B-12 POTENTIAL FAULT FEATURES
NEAR ROCKY FLATS**

MODIFIED FROM U.S. DEPARTMENT OF ENERGY,
FINAL ENVIRONMENTAL IMPACT STATEMENT,
APPENDIX C-1, 1980

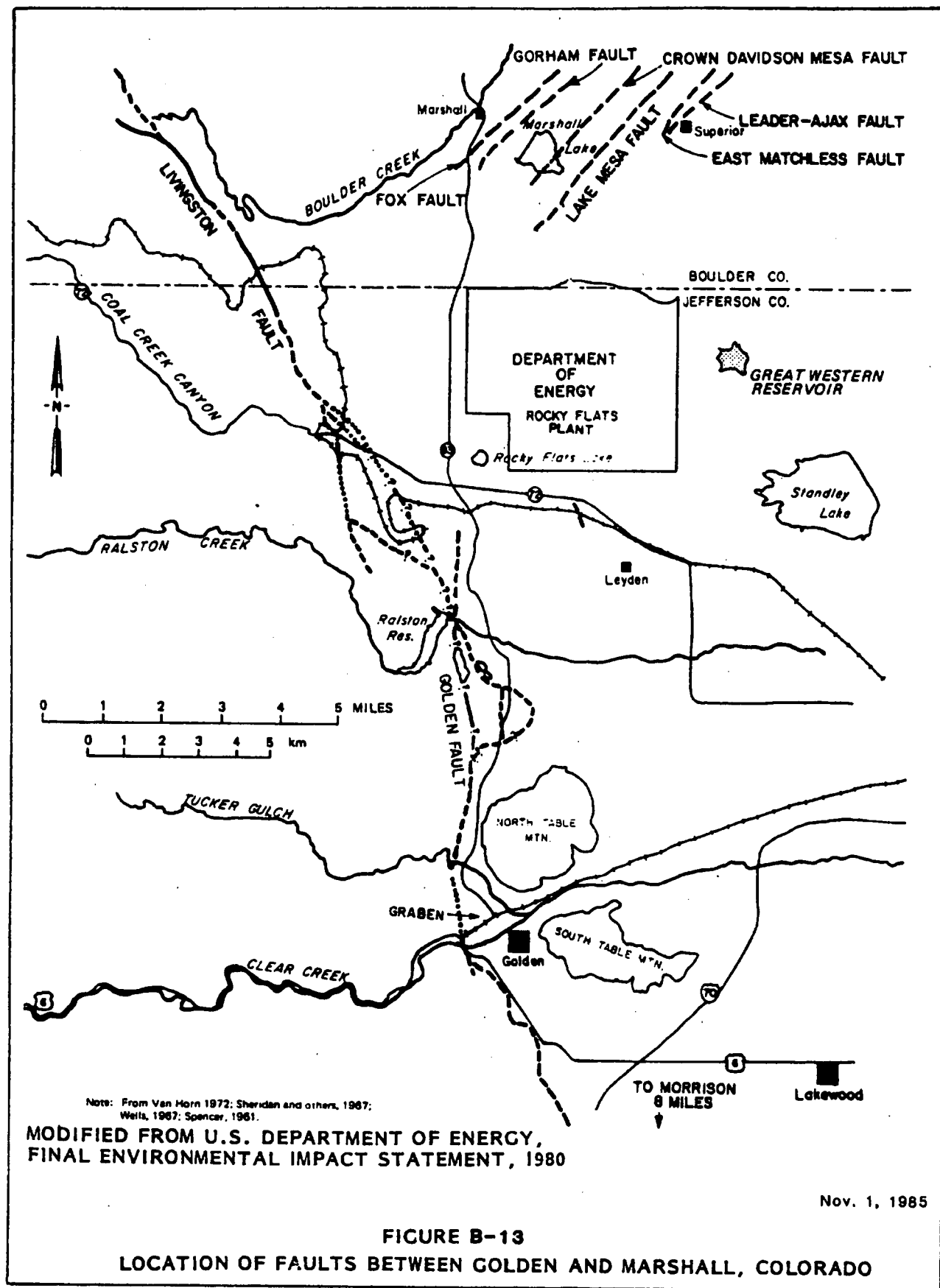


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Feature No. 2 is located north of holding pond A-2 on the main fork of Walnut Creek. The 1980 investigation found no evidence of displacement and concluded that faulted blocks do not exist.

The area around Eggleston Reservoir (Feature 7 on Figure B-12) was investigated in 1980 to determine if a fault existed in the vicinity of the reservoir. The results of mapping, trenching and auger boring did not reveal any displacements or disturbances in the area. Therefore, this study concluded the Eggleston fault does not exist (see Figure B-13) as earlier believed.

A photo lineament study in 1981 found only one lineament suggestive of having possible fault control. Field investigations revealed this feature as erosional in origin, not fault related. A previous aerial photography study by EG&G in 1980 showed an east-west trending linear feature just north of pond A-2 (see Feature 3 in Figure B-12). On investigation of the area EG&G concluded the linear feature was probably the result of changes in ground moisture and vegetation in the area.



The geomorphic features suggestive of possible fault control that Dames and Moore (1981) investigated were:

1. A bedrock step near Rocky Flats Lake located 1.3 miles southwest of the Plant site. It was found that relief on the bedrock surface was erosional and not related to shear zone faulting.
2. The Denver and Rio Grande Railroad cut south of the Plant was found to be an old infilled channel and not a north-northwest trending fault.
3. Tilted bedrock overlain by quaternary gravels at McCaslin Boulevard, north of the Plant, is the result of gravity faulting along a landslide slip plane.

None of the features noted above that were investigated in the extensive study discussed in this subsection are considered to present a seismic hazard to the Rocky Flats Plant.

B-3b Flood Plain Standard

Documentation, including the source, has been provided in subsection B-2a, indicating that no hazardous waste management facilities are located within a 100-year flood plain.

B-4 Traffic Patterns (40 CFR 270.14(b)(10))

Access to the site is from Indiana Street and Colorado Route 93. Most vehicle traffic proceeds to Indiana Street via Colorado Routes 123 or 72 (see Figure B-1).

Traffic Control: Traffic controls for all vehicles entering the site are stringent. All vehicles are subject to search and must have a vehicle permit before they are allowed to enter the site. Applicable portions of the traffic regulations for Rocky Flats are shown in Table B-2.

Road Surfacing: All roads are surfaced to handle any type of traffic or vehicle load (heavy construction equipment, automobiles, etc.) that can be reasonably expected.

TABLE B-2. Traffic Regulations

1. All personnel vehicles entering the plant site shall display the Rockwell vehicle permit in the area of the windshield on the driver's side in such a manner that it may be viewed from the outside.
 - All operators shall display the vehicle permit when entering.
 - All parked vehicles shall have their vehicle permit displayed in such a manner to be viewed from the outside.
 - Operators who drive different vehicles to work must transfer the permit to the vehicle they plan to drive.
 - If an operator has forgotten his vehicle permit, he must pull over to the parking area outside the main gates and obtain a temporary permit. Upon exiting the plant, he must stop and return the numbered temporary permit to a security inspector.
 - Motorcycle operators are subject to the same regulations. They shall have the permit located in a visible location on the front of the vehicle.
2. Operators will operate their vehicles in accordance with the State of Colorado traffic rules and regulations.

TABLE B-2. CONTINUED

3. Reserved parking spaces will only be used by the assigned individual or group: Vanpool, off-site visitor, handicap, Plant Protection, government vehicle, DOE vehicle, etc. These reserved parking spaces are reserved at all times.
4. All employees shall park in designated lots and spaces only. Designated lots are those shown on the attached map.
5. Vehicle operators shall drive in the indicated direction only on one-way aisles and park with the front of the vehicle facing inward in angle parking spaces.
6. Motorcycles will park in designated motorcycle areas or vehicle spaces only.
7. No parking in established vehicle pick-up areas.
8. No parking in designated construction areas.
9. Operators shall yield the right-of-way to pedestrians and to any emergency vehicle (ambulance, Fire Department, Plant Protection, etc.) if that vehicle is sounding a siren and/or displaying an emergency light.
10. Operators are reminded of the reverse traffic flow on the East Access Road, Central Avenue, and the West Access Road. At certain times of the day, the direction of the center lane reverses to handle the volume of traffic.

TABLE B-2 CONTINUED

-
- The center lane on the East Access Road and Central Avenue is open to westbound traffic except during the time frame of 3:00 p.m. to 4:30 p.m. During this time frame, the center lane is open to eastbound traffic only. Operators are not allowed to pass using the oncoming lane of traffic.
 - The center lane on the West Access Road is open to eastbound traffic except during the time frame of 3:00 p.m. to 4:30 p.m. During this time frame, the center lane is open to westbound traffic only. Operators are not allowed to pass using the oncoming lane.
11. Vehicles that are illegally parked are subject to being towed to the parking lot outside the East Gate.
 12. Plant Protection is the designated organization for plant traffic control and enforcement of traffic rules and regulations. Employees shall obey all posted traffic regulations, speed limits, and any traffic directions given by Plant Protection personnel.
 13. Employee Relations and appropriate supervision are responsible for administering discipline to Rockwell personnel who disobey traffic regulations.

Estimated Volume: A typical traffic count is:

	<u>East Gate</u>	<u>West Gate</u>
Rush Hour	2,000	850
Total for Day	3,530	1,275

There are about 850 shipments by truck of chemicals and routine materials to and from the Rocky Flats Plant each year.

References

Davis, T.L., 1980, "Rocky Flats Reflection Seismic Project." In: U.S. Department of Energy, Final Environmental Impact Statement, Vol. 2, Appendix C-2.

Lackey, J. G., Jones, E. B., and Wollenberg, H. A., 1980. "Summary of Non-Nuclear Remote Sensing at the Rocky Flats Site and Status of Analysis of Geological and Hydrological Indicators." In: U.S. Department of Energy, Final Environmental Impact Statement, Vol. 2, Appendix C-1.

U.S. Department of Energy, 1980. Final Environmental Impact Statement, Vols. 1 and 2.

U.S. Department of Energy 1981. "Geological and Siesmological Investigations of Rocky Flats", by Dames and Moore.

COD078343407

Date: November 1, 1985

Revision No.: 0

C

SECTION C

WASTE CHARACTERISTICS AND WASTE ANALYSIS PLAN

SECTION C

WASTE CHARACTERISTICS AND WASTE ANALYSIS PLAN

C-1 Chemical and Physical Analysis (40 CFR 270.14(b)(2); CHWR 100.41(a)(2))

This section describes the chemical and physical nature of the hazardous wastes stored at Rocky Flats facility. The Rocky Flats Plant is operated by Rockwell International, North American Space Operations, for the United States Department of Energy. All plant activities including waste management are funded by the Department of Energy (DOE) and are managed by Rockwell International. The anticipated hazardous wastes that will be generated at the Plant and their estimated maximum quantities are listed in the Part A application and discussed further in this section and the operational narrative (Section D).

The Rockwell Waste Operations Department is responsible for waste management at the Rocky Flats Plant. The organizational structure of the Waste Operations Department is illustrated in Figure C-1. The Manager of Waste Operations reports to the Director of Plutonium Operations and is responsible for the overall management of hazardous wastes generated at Rocky Flats. Managers of two subgroups, Liquid Waste Operations and Solid Waste Operations, and the Hazardous Waste Coordinator report to the Manager of Waste Operations.

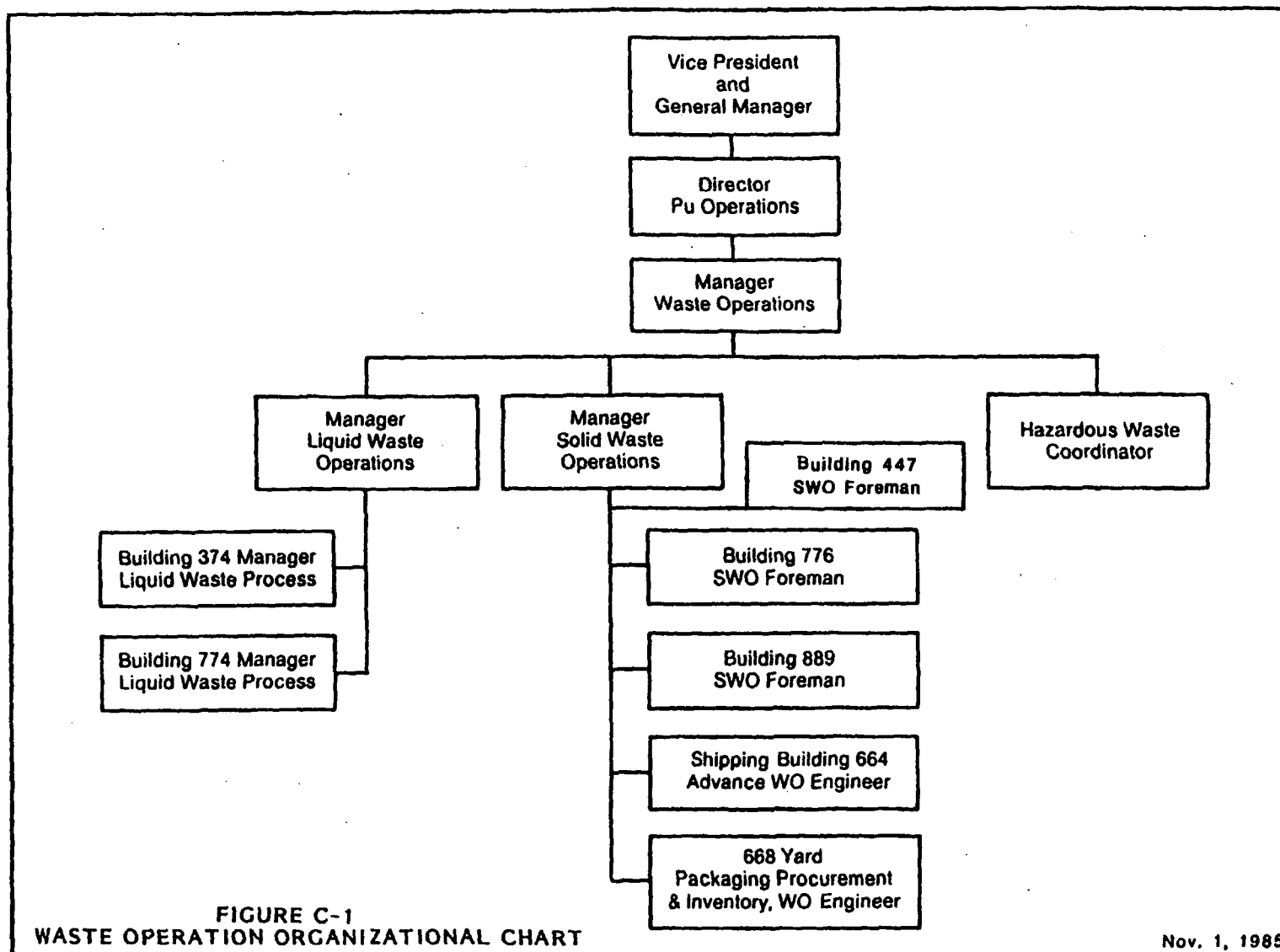


FIGURE C-1
WASTE OPERATION ORGANIZATIONAL CHART

Nov. 1, 1985

The primary mission of the Rocky Flats Plant is to produce components for nuclear weapons. The Plant's secondary mission is to provide support to 1) the fabricating mission by operating facilities for the recovery of plutonium, waste treatment and disposal, chemical laboratories, and research and development, and 2) special support operations for other DOE facilities. In performing these operations, waste materials are generated that may be hazardous and regulated under RCRA regulations.

Hazardous wastes typically generated at the Rocky Flats Plant are usually not part of a continuing process waste stream. Exceptions to this are oil, paint, paint solvents, silver recovery solutions, ECM sludges and halogenated organic solvents. Hazardous wastes which have met the criteria for off-site disposal are generally stored in 55-gallon drums that are placed in modified cargo containers and separated with regard to waste compatibility until they are transferred off-site for disposition. Hazardous wastes are recycled whenever it is practical to do so. Shipment to an approved treatment, storage, and disposal (TSD) facility is the second option for disposal.

The Hazardous Waste Coordinator is notified of the need to dispose of a hazardous waste when the waste generator completes a Waste Processing Request (WPR) form (see Figure C-2). This form is reviewed by the Hazardous Waste Coordinator and Environmental Analysis and Control Section (EA&C) personnel to determine the appropriate disposal method. The waste is sampled and a fingerprint analysis is made to check consistency with the information reported on the WPR form. When all analytical data have been received, a copy of the WPR form is returned to the waste generator with disposal instructions.

ORIGINATOR OF REQUEST:

DATE: _____

NAME: _____ ORGANIZATION _____

PHONE: _____ BUILDING & ROOM NO. _____

Where applicable, please check the appropriate boxes, identify, and enter description information including toxic and fire hazards.

SOLID ☐ WEIGHT, Kg (lbs) _____ LIQUID ☐ VOLUME, LITER (gal) _____

ACID ☐ NEUTRAL ☐ BASE ☐ ANALYTICAL REQ. NO. _____
(Attach copy of results)

DESCRIPTION: (Attach sheet if additional space is required)

SS Material Wt. Discarded: grams _____ element _____; grams _____ element _____

From Acct. No. _____ To Acct. No. _____ NMC Doc. No. _____

Equipment No. _____

RADIATION MONITORING SURVEY RESULTS:

Direct _____ Smear _____ Gamma Radiation _____

Signature _____ Date _____

DISPOSITION OF WASTE:

A. RADIOACTIVE WASTE

Send to Building No. _____ Attention of _____

Approved by Waste Operations _____ Date _____

B. NONRADIOACTIVE, NONHAZARDOUS, NONROUTINE WASTES

Send to Landfill

Approved by Environmental Analysis _____ Date _____

C. NONRADIOACTIVE HAZARDOUS WASTES

Send to Building No. _____ Attention of _____

Approved by Waste Operations _____ Date _____

Approved by Environmental Analysis _____ Date _____

DISTRIBUTION: Included in instructions (see reverse side of goldenrod sheet)

FIGURE C-2 WASTE PROCESSING REQUEST FORM

Nov. 1, 1985

Table C-1 lists hazardous wastes by EPA ID number according to their method of present or planned management at the site. Detailed analyses will be provided where applicable.

Table C-2 lists the hazardous waste managed during 1985. The volumes listed under the "Yearly Volumes Generated" column were transferred to Waste Operations during the year.

Hazardous waste at Rocky Flats is generally placed in containerized 55-gallon drums. Containers and labels for transporting hazardous waste are selected by reference to 49 CFR, Section 172.101, Columns 4 and 5. All hazardous waste containers are marked with the information shown in Figure C-3. Policies regarding the on-site transportation of hazardous waste are provided in the On-Site Transportation of Radioactive and Other Hazardous Materials Manual which is discussed in Section D.

A policy to recycle off-site as much hazardous waste as possible is aggressively pursued. The evaluation of recycling methods is a continuous process which is necessary to facilitate recycling of some infrequently received and/or off-specification chemical wastes.

Table C-1

Waste Listing by Hazardous Code
and Management Method

Listed below are the wastes that are managed at the Rocky Flats site, followed by each waste's EPA hazard code¹. The wastes are contained in drums stored in converted cargo containers as described in Section D.

F003, U002	- I, T	D011	- E, T
F001, U211	- T	F005, U220	- I, T
F001, U080	- T	F001, U226	- T
D001, U001	- I, T	F003, U239	- I, T
D002, D003	- C, R, T	D001	- I, T
D001	- E, I, T	D106	- H, T
D009, U151	- E, T	D005	- E, T
D001, F003, U154	- I, T	D001	- I, T
D002, D003	- C, R, T	D002, D003, U134	- C, R, T
F001	- T	D001	- I, T
D002, D003	- C, R, T	D001	- I, T
D002, D003	- C, R, T	F001, F002	- T
D002, D003	- C, R, T	D001, D002, D003,	
D002, D003	- C, R, T	U135	- I, C, R, T
D001, D002, D003,		D002, D003	- C, R, T
U135	- I, C, R, T	D003	- R, T
D007	- E	U028	- I, R, T

¹Key: I = Ignitable.
C = Corrosive.
R = Reactive.
E = EP Toxic.
H = Acutely Hazardous.
T = Toxic.

Table C-2

Hazardous Waste Generated, Stored, and Shipped
Off-site for Recycling or Disposal (1985)

Waste	EPA HW Number(s)	Yearly Quantities (Vol.)* (Wt.)**
Acetone	F003, U002	(1,000 gal) (6,588 lbs)
Carbon Tetrachloride	F001, U211	(25 gal) (333 lbs)
Methylene Chloride (Dichloromethane)	F001, U080	(100 gal) (1,106 lbs)
Ethanol	D001, U001	(1,000 gal) (6,583 lbs)
Hydrochloric Acid	D002, D003	(50 gal) (500 lbs)
Magnesium	D001	(1,395 gal) (3,000 lbs)
Mercury	D009, U151	(1 gal) (25 lbs)
Methanol	D001, F003, U154	(500 gal) (3,300 lbs)
Nitric Acid	D002, D003	(5,000 gal) (62,663 lbs)
Tetrachloroethylene (Perchloroethylene)	F001	(500 gal) (6,767 lbs)
Phosphoric Acid	D002, D003	(500 gal) (7,648 lbs)
Sulfuric Acid	D002, D003	(1,000 gal) (15,354 lbs)

*Vol. expressed in gal = gallons, L = liters, cu yd = cubic yards.

**Wt. expressed in lbs = pounds, Kg = kilograms, M.T. = Metric Tons.

Table C-2
(continued)

Waste	EPA HW Number(s)	Yearly Quantities (Vol.)* (Wt.)**	
Silver	D011	(14,307 L)	(108 kg)
Toluene	F005, U220	(500 gal)	(3,615 lbs)
1,1,1-Trichloroethane	F001, U226	(10,000 gal)	(111,673 lbs)
Xylene	F003, U239	(100 gal)	(1,251 lbs)
Used Oil	D001	(25,000 gal)	(175,000 lbs)
Sodium Cyanide	D106	(2 gal)	(30 lbs)
Barium Chloride	D005	(55 gal)	(800 lbs)
Sodium Nitrate/ Potassium Nitrite	D001	(55 gal)	(800 lbs)
Etchant Solution (Acid)	D002, D003, U134	(6,000 gal)	(52,846 lbs)
Used O & M Paint Solvents/Sludge	D001	(7,000 L)	(7.0 MT)
Waste/Surplus O & M Paint	D001	(1,400 L)	(1.4 MT)
Freon 113	F001, F002	(10,000 gal)	(130,521 lbs)
Bromine Trifluoride	D002, D003	(0.0196 lbs)	(2 cu. yd)
Chlorine Trifluoride	D002, D003	(0.0098 lbs)	(1 cu. yd)

*Vol. expressed in gal = gallons, L = liters, cu yd = cubic yards.

**Wt. expressed in lbs = pounds, Kg = kilograms, M.T. = Metric Tons.

Table C-2
(continued)

Waste	EPA HW Number(s)	Yearly Quantities (Vol.)* (Wt.)**
Hydrogen Sulfide	D001, D002, D003, U135	(0.0196 lbs) (2 cu. yd)
HCl and Hydrogen Sulfide Mixture	D001, D002, D003, U135	(0.0098 lbs) (1 cu. yd)
Iodine Pentafluoride	D002, D003	(0.0196 lbs) (2 cu. yd)
Tungsten Hexafluoride	D003	(0.0342 lbs) (15 cu. yd)
Diocetyl Phthalate	U028	(150 gal.) (1232 lbs)
ECM Sludge	D007	(15,600 gal.) (195,280 lbs)

*Vol. expressed in gal = gallons, L = liters, cu yd = cubic yards.

**Wt. expressed in lbs = pounds, Kg = kilograms, M.T. = Metric Tons.

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR
PUBLIC SAFETY AUTHORITY, OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY

PROPER DOT
SHIPPING NAME _____ UN OR NA# _____

GENERATOR INFORMATION:

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

EPA ID NO. _____ EPA WASTE NO. _____

ACCUMULATION START DATE _____ MANIFEST DOCUMENT NO. _____

HANDLE WITH CARE!
CONTAINS HAZARDOUS OR TOXIC WASTES

STYLE WM-4

Nov. 1, 1985

FIGURE C-3 MARKING INFORMATION FOR HAZARDOUS WASTE CONTAINERS

C-2 Waste Analysis Plan (40 CFR 270.14(b)(3); CHWR 100.41(a)(3))

Rocky Flats' Waste Analysis Plan covers the requirements of 40 CFR 264.13(b). Rocky Flats maintains various levels of waste analysis and quality control to determine the character of wastes and the method of on-site processing and off-site disposal. The generator is initially responsible for determining the hazardous characteristics of waste generated in his operations. Each generator is required to supply a detailed chemical and physical analysis of a representative waste sample. This information is to be provided on a Waste Processing Request (WPR) form (Figure C-2). Examples of waste profile sheets which are used to determine disposition of the wastes upon completion of the WPR are found in Appendix C.1. This form constitutes the basis for the administrative and recordkeeping requirements specified under RCRA. The WPR form, in conjunction with the generator's manifest, represents the principal method for identifying waste for processing.

Adequate physical and chemical analyses are needed to properly and safely store, blend, mix, and treat the wastes prior to off-site transport. The generator sends the WPR form to the Environmental Analysis and Control Section. On-site wastes are sampled and a fingerprint analysis is made to check consistency with the information reported on the WPR form and the accompanying manifest. A copy of the form is returned to the generator, noting instructions for the proper disposition of the waste. The generator then sends

the waste to the location noted on the form. If additional analytical data are necessary to determine proper disposition, the generator is requested to supply these data prior to shipment.

C-2a Parameters and Rationale for Selection

Rocky Flats generates, on an intermittent basis, the following six categories of waste:

- o Ignitable (I) -- Waste solvents.
- o Corrosive (C) -- Acids and bases.
- o Reactive (R) -- Reactive gases, acids, and miscellaneous laboratory wastes.
- o EP Toxic (E) -- Wastes contaminated with heavy metals or organic compounds that can leach under simulated landfill conditions.
- o Toxic (T) -- Specific listed hazardous wastes.
- o Acutely Hazardous (H) -- Cyanide and other EPA listed "P" wastes.

The wastes are managed by the following processes:

- o Containerize -- I, C, R, E, T, H.
- o Recycling -- I, T.
- o Incinerate (Future) -- I, R, E, T, H.
- o Disposal Off-site -- I, C, R, E, T, H.

Wastes are containerized on-site in drums which are stored in converted, modified cargo containers. Depending on waste characterization, wastes are temporarily stored and/or treated prior to off-site transport and reclamation or disposal. The waste management processes are discussed in Section D. Wastes that are transported off-site are accompanied by a manifest. The WPR form and concomitant on-site sampling determine processing and final disposition of wastes.

Hazardous wastes are not disposed of at the Plant. Instead, they are reused, commercially recycled, or shipped off-site for disposal. Figure C-4 shows disposal pathways for hazardous waste.

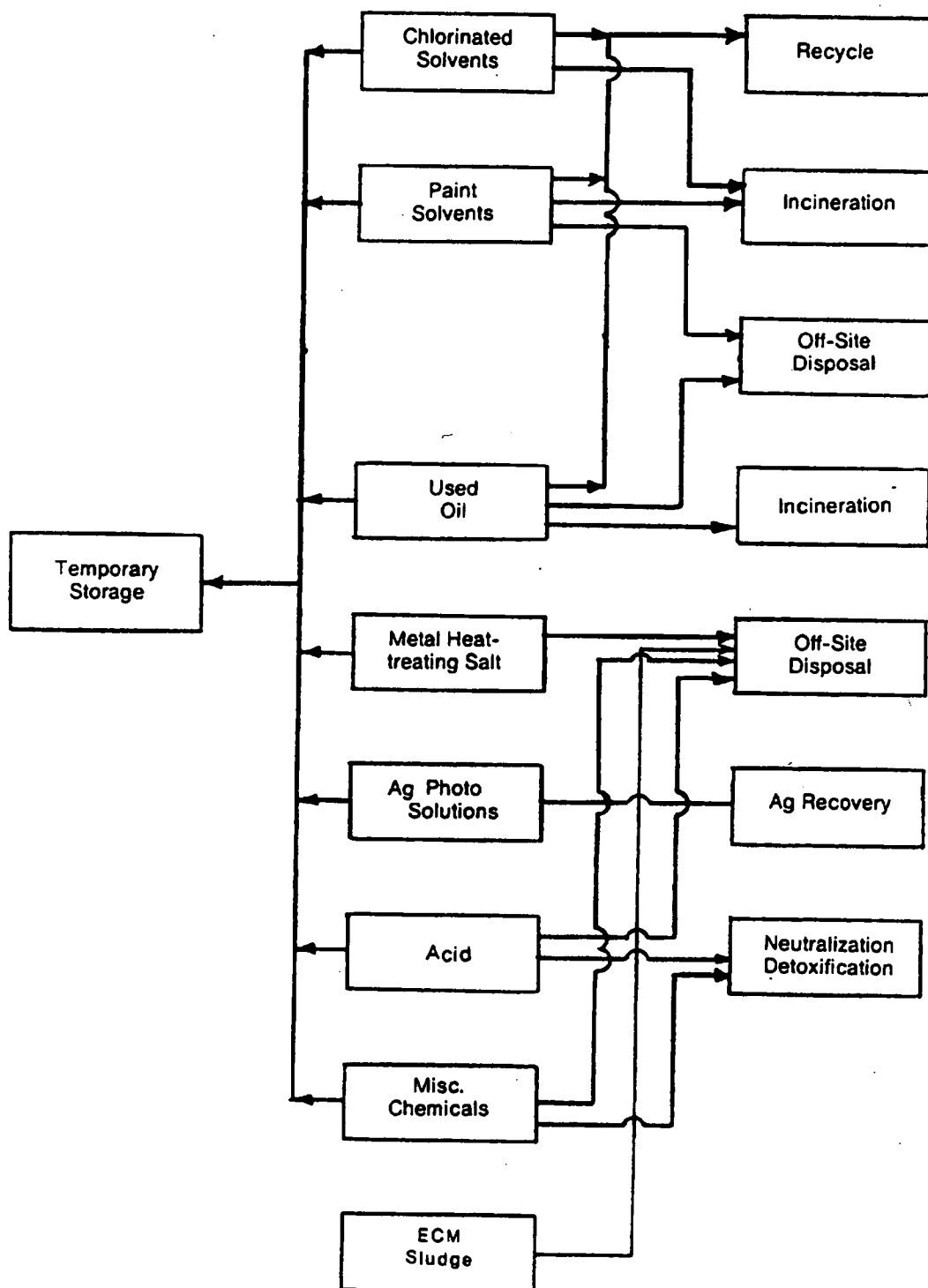


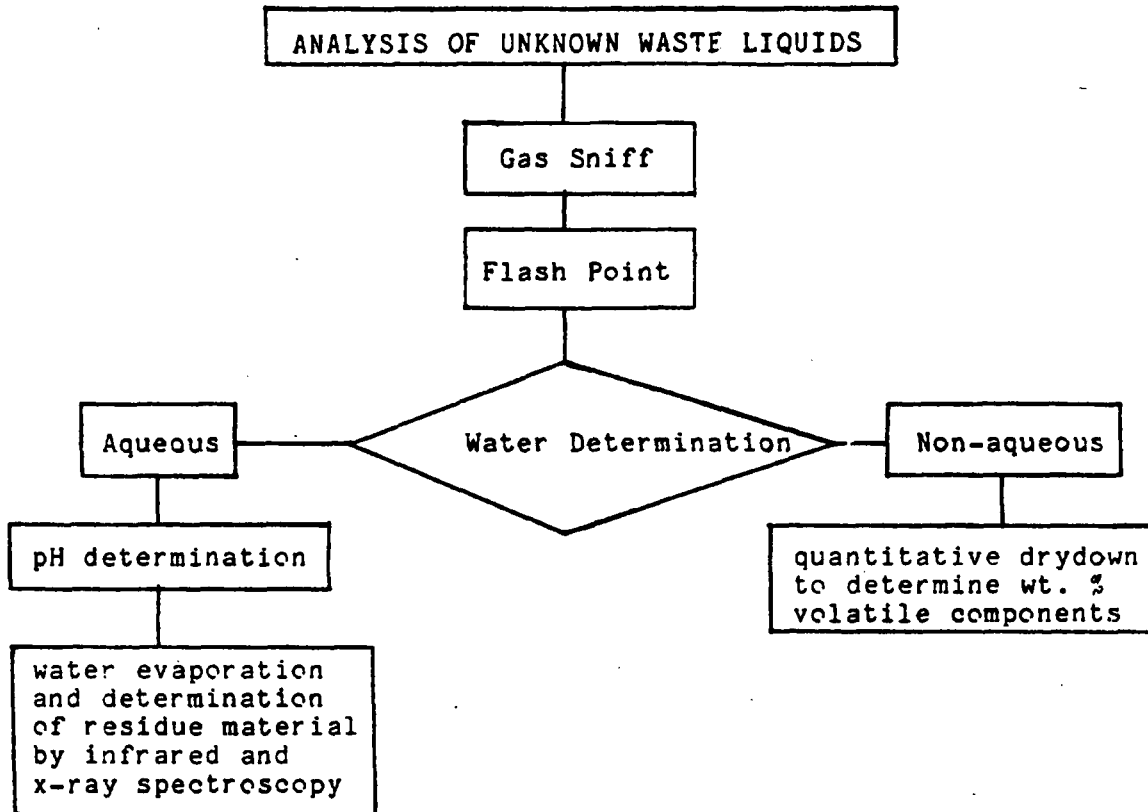
FIGURE C-4 FLOW CHART FOR HAZARDOUS WASTE MANAGEMENT

Nov. 1, 1985

As noted in Tables C-1 and C-2, the largest volume of hazardous wastes at Rocky Flats are composed of oil, acid, paint, paint solvent, ECM sludge, and halogenated hydrocarbon solvents. Remaining materials constitute a very small percentage of the total hazardous waste volume. Spent hydrocarbon solvent wastes, and paint and paint solvent wastes are recycled by commercial contractors. Those wastes that cannot be recycled are processed and disposed of off-site at EPA-permitted disposal facilities. All hazardous wastes held on-site awaiting disposal are kept in RCRA-approved storage facilities.

C-2b Test Methods and Frequency of Analysis

It is Rocky Flats policy that all waste generators utilize and all on-site laboratory analyses conform to approved analytical test methods as described in 40 CFR 261, Appendices I, II, and III (see Appendix C-2); U.S. EPA's "Test Methods for Evaluating Solid Waste, Physical and Chemical Methods," SW-846; or other EPA-approved methods. When fingerprint screening tests are used (see Figure C-5), these test methods follow accepted EPA, State, ASTM, or analytical equipment manufacturer procedures.



Gas Sniff: to determine presence of chlorinated solvents and other volatile components by comparing the vapor's infrared spectrum with standard reference spectra.

Flash Point: of homogeneously mixed sample is determined using ASTM method D93-80, see attached sheets.

Water Determination: sample layer(s) are tested with water sensitive indicator paper, Watesmc®

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FIGURE C-5

FINGERPRINT SCREENING TESTS
ROCKY FLATS PLANT

Rocky Flats' analytical laboratory is equipped so that constituents can be analyzed by the EPA, ASTM, or equivalent method. Typical waste constituents and analytical methods are listed in Table C-3.

The laboratory has atomic absorption and gas chromatographic capabilities which allow the detection of trace metals and selected organic constituents. Compatibility testing for blending or solidifying wastes is performed in the on-site laboratory.

A summary of sampling procedures and laboratory tests/analysis performed at Rocky Flats to fingerprint hazardous wastes are summarized below.

C-2b(1) Sampling Procedures

.1 SOLIDS

A representative sample will be taken by one of three techniques as deemed appropriate for the material being sampled.

- .1.1 Powders may be mechanically mixed to homogenized the material prior to sampling.
- .1.2 A "thief" (tube) may be used to remove a sample from the entire depth of the material.
- .1.3 Chunks of material may be removed from the top, middle and bottom sections of waste, then crushed and homogenized prior to taking a smaller sample.

Table C-3

Typical Waste Constituents and Analytical Methods

Parameter	Method ¹
<u>Physical Properties</u>	
Color	
Colorimetric, ADMI	Method 110.1
Colorimetric, platinum-cobalt	Method 110.2
Spectrophotometric	Method 110.3
pH	
Electrometric	Method 150.1
Residue, nonfilterable and volatile	Method 160.2
Temperature	
Thermometric	Method 170.1
Turbidity	
Nephelometric	Method 180.1

¹U.S. EPA, "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, March 1983, unless otherwise indicated.

Table C-3
(continued)

Parameter	Method ¹
<u>Physical Properties</u> (continued)	
Heat value (Btu) Oxygen bomb calorimeter	ASTM D240
Ignitability, flash point	ASTM D-93-80
<u>Metals</u>	
Atomic absorption methods	Method 200.0
Arsenic	
AA, furnace	Method 206.2
AA, hydride	Method 206.3
Spectrophotometric, SDDC	Method 206.4
Digestion method for hydride and SDDC	Method 206.5

¹U.S. EPA, "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, March 1983, unless otherwise indicated.

Table C-3
 (continued)

Parameter	Method ¹
<u>Metals</u> (continued)	
Barium AA, direct aspiration	Method 208.1
Cadmium AA, direct aspiration	Method 213.1
Chromium AA, direct aspiration	Method 218.1
Copper AA, direct aspiration	Method 220.1
Iron AA, direct aspiration	Method 236.1

¹U.S. EPA, "Methods for Chemical Analysis of Water and Wastes,"
 EPA-600/4-79-020, Environmental Monitoring and Support Labora-
 tory, Cincinnati, Ohio, March 1983, unless otherwise indicated.

Table C-3
(continued)

Parameter	Method ¹
<u>Metals</u> (continued)	
Lead	
AA, direct aspiration	Method 239.1
Mercury	
Cold vapor, manual	Method 245.1
Cold vapor, automated	Method 245.2
Cold vapor, sediments	Method 245.5
Selenium	
AA, hydride	Method 270.0
furnace	Method 270.2
Tin	
AA, direct aspiration	Method 282.1

¹U.S. EPA, "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, March 1983, unless otherwise indicated.

Table C-3
 (continued)

Parameter	Method ¹
<u>Metals(continued)</u>	
Zinc	
AA, direct aspiration	Method 289.1
<u>Inorganic, Nonmetals</u>	
Acidity	
Titrametric	Method 305.1
Alkalinity	
Titrametric (pH 4.5)	Method 310.1
Colorimetric, automated methyl orange	Method 310.2
Chloride	
Colorimetric, automated ferricyanide, AA I	Method 325.1
Colorimetric, automated ferricyanide, AA II	Method 325.2

¹ U.S. EPA, "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, March 1983, unless otherwise indicated.

Table C-3
(continued)

Parameter	Method ¹
<u>Inorganic, Nonmetals</u> (continued)	
Titrametric, mercuric nitrate	Method 325.3
Cyanide - Specific ion electrode	
Amenable to chlorination	
Titrametric, spectrophotometric	Method 335.1
Total	
Titrametric, spectrophotometric	Method 335.2
Colorimetric, automated UV	Method 335.3
Fluoride - Specific ion electrode	
Colorimetric, SPADNS with Bellack	
distillation	Method 340.1
Potentiometric, ion selective electrode	Method 340.2
Colorimetric, automated complexone	Method 340.3

¹U.S. EPA, "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, March 1983, unless otherwise indicated.

Table C-3
(continued)

Parameter	Method ¹
<u>Inorganic, Nonmetals</u> (continued)	
Nitrogen	
Kjeldahl, total	
Colorimetric, automated phenate	Method 351.1
Colorimetric, semi-automated block digester AA II	Method 351.2
Colorimetric; titrametric; potentiometric	Method 351.3
Potentiometric, ion selective electrode	Method 351.4
Nitrate	
Colorimetric, brucine	Method 352.1
Nitrate-nitrite	
Colorimetric, automated hydrazine reduction	Method 353.1
Colorimetric, automated cadmium reduction	Method 353.2

¹U.S. EPA, "Methods for Chemical Analysis of Water and Wastes,"
EPA-600/4-79-020, Environmental Monitoring and Support Labora-
tory, Cincinnati, Ohio, March 1983, unless otherwise indicated.

Table C-3
(continued)

Parameter	Method ¹
<u>Inorganic, Nonmetals</u> (continued)	
Colorimetric, manual cadmium reduction	Method 353.3
Nitrite	
Spectrophotometric	Method 354.1
Oxygen, dissolved	
Membrane electrode	Method 360.1
Modified Winkler (full bottle technique)	Method 360.2
Phosphorus	
All forms	
Colorimetric, automated, ascorbic acid	Method 365.1
Colorimetric, ascorbic acid, single reagent	Method 365.2

¹U.S. EPA, "Methods for Chemical Analysis of Water and Wastes,"
EPA-600/4-79-020, Environmental Monitoring and Support Laboratory,
Cincinnati, Ohio, March 1983, unless otherwise indicated.

Table C-3
(continued)

Parameter	Method ¹
<u>Inorganic, Nonmetals</u> (continued)	
Colorimetric, ascorbic acid, two reagent	Method 365.3
Total	
Colorimetric, automated, block digester AA II	Method 365.4
Silica, dissolved	
Colorimetric	Method 370.1
Sulfate	
Colorimetric, automated chloranilate	Method 375.1
Colorimetric, automated methyl thymol blue AA II	Method 375.2
Gravimetric	Method 375.3
Turbidimetric	Method 375.4

¹U.S. EPA, "Methods for Chemical Analysis of Water and Wastes,"
EPA-600/4-79-020, Environmental Monitoring and Support Labora-
tory, Cincinnati, Ohio, March 1983, unless otherwise indicated.

Table C-3
(continued)

Parameter	Method ¹
<u>Inorganic, Nonmetals</u> (continued)	
Sulfide - Specific ion electrode	
Titrametric, iodine	Method 376.1
Colorimetric, methylene blue	Method 376.2
Sulfite	
Titrametric	Method 377.1
<u>Organics</u>	
Biochemical oxygen demand	
BOD (5 day, 20° C)	Method 405.1
Chemical oxygen demand	
Titrametric, mid-level	Method 410.2
Titrametric, low level	Method 410.2

¹U.S. EPA, "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, March 1983, unless otherwise indicated.

Table C-3
(continued)

Parameter	Method ¹
<u>Organics</u> (continued)	
Titrametric, high level for saline waters	Method 410.3
Colorimetric, automated; manual	Method 410.4
Oil and grease, total recoverable	
Gravimetric, separatory funnel extraction	Method 413.1
Spectrophotometric, infrared	Method 413.2
Organic carbon, total	Standard Methods 505 ²
Combustion or oxidation	Method 415.1
Petroleum hydrocarbons, total recoverable	
Spectrophotometric, infrared	Method 418.1

¹U.S. EPA, "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, March 1983, unless otherwise indicated.

²Standard Methods for Water and Wastewater Analyses, 15th Edition.

Table C-3
(continued)

Parameter	Method ¹
<u>Organics</u> (continued)	
Phenolics, total recoverable	
Spectrophotometric, manual 4-AAP with distillation	Method 420.1
Colorimetric, automated 4-AAP with distillation	Method 420.2
Spectrophotometric, MBTH with distillation	Method 420.3
Methylene blue active substances (MBAS)	
Colorimetric	Method 425.1
NTA	
Colorimetric	Method 430.1
Colorimetric, automated, zinc-zincon	Method 430.2

¹U.S. EPA, "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, March 1983, unless otherwise indicated.

Table C-3
 (continued)

Parameter	Method ¹
<u>Organics</u> (continued)	
PCB Gas chromatograph	Method 8.08 ²

¹U.S. EPA, "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, March 1983, unless otherwise indicated.

²PCB's and other organic chemicals, as Rocky Flats deems appropriate, will be analyzed according to the appropriate gas chromatograph (GC) analytical procedure described in "Test Methods for Evaluating Solid Waste; Physical/Chemical Methods," SW-846, 1982.

.2 LIQUIDS

A representative sample will be taken by one of two techniques as deemed appropriate for the material being sampled.

.2.1 A sample may be removed from the container after homogenizing by mechanically mixing the material.

.2.2 A "thief" (tube) may be used to remove a sample from the entire depth of the material.

.3 GASES

Gas samples are taken using an evacuated sampling bottle.

FREQUENCY OF ANALYSIS

The need for analysis is determined on an individual basis.

C-2b(2) Parameters for Fingerprint Analysis

.1 IGNITABILITY

.1.1 Flash Point

The flash point of organic liquid waste will be established using ASTM D-93-34 (Pensky Martin, Closed Cup) procedure (Petroleum Products and Lubricants, Vol. 1, 1975). Alternately, a known value may be used if the waste has been chemically characterized or is considered a known waste form with an established flash point.

.1.2 Pyrophoric

Waste forms known to contain pyrophoric metal fines or water reactive materials will be considered ignitable and will be treated prior to disposal. Unknown waste forms will be analyzed to establish the chemical composition. The chemical composition will be assessed to establish the ingitability of the waste. In doubtful cases, a sample will be submitted to the analytical laboratory for testing.

.1.3 Ignitable Compressed Gas

Gases known to meet the definition of a flammable compressed gas (given in 49 CFR 173.300) will be classified as a flammable compressed gas. Unknown gases will be sampled and analyzed by mass spectroscopy to establish the gaseous components. Pressure measurements will be made using the appropriate pressure gauge.

.1.4 Oxidizer

A known oxidizer will be classified as an oxidizer. Chemical analysis will be used to identify the presence of an oxidizer in unknown waste samples. Sample dissolution followed by a standard oxidation/reduction titration procedure will be used for this analysis.

.2 CORROSIVITY

Corrosivity of unknown aqueous waste will be established by making pH measurements using Rocky Flats analytical procedure L-1141-A.

.3 REACTIVITY

.3.1 Reactivity of unknown waste will be established by one or more of the following methods:

- o A differential thermal analysis
- o A differential scanning calorimetry analysis
- o A standard shock test
- o A chemical identification, followed by a reactivity assessment made on the basis of the chemical composition

.3.2 Water Reactive

Unknown waste sample may be added to water to test reactivity. Temperature, pressure and gas generation are the parameters which are to be measured.

.3.3 Cyanide and sulfide compounds will be identified by chemical analysis when there is reason to suspect the presence of such compounds in the waste.

4. EP TOXICITY

Wastes suspected of containing unknown amounts of heavy metals or insecticides will be subjected to the extraction procedure test as described in 40 CFR 261, Appendix 11.

C-2c Sampling Methods

A designated representative from Rocky Flats obtains a sample from each container of waste to be stored at the facility for processing. All samples are collected in accordance with approved methods specified in EPA's "Samplers and Sampling Procedures for Hazardous Waste Streams" (EPA 600/2-80-018), and "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (EPA SW-846).

C-2d Quality Assurance/Quality Control (QA/QC)

The reliability and credibility of analytical laboratory results are established by the inclusion, as an integral part of any analytical procedure, of a program of scheduled replicate analyses and analyses of standard or spiked samples. Rocky Flats maintains the following procedures to monitor the accuracy of on-site analyses:

- o Frequency of instrument standardization:
 - Every use
- o Frequency of duplicate measurements:
 - Every 10th sample; monthly for bomb calorimeter
- o Frequency of spiked sample:
 - Every 25th sample; monthly for bomb calorimeter
- o Frequency of split sample:
 - Quarterly

The precision of analytical results are established as the standard deviation from true values or from the mean of replicate analyses. Accuracy is reported as the percent recovery of a constituent from a sample of known value with a given analytical procedure and analyst.

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In addition, the Rocky Flats laboratory participates in EPA and NBS QA/QC audit programs each year.

C-3 Requirements for Wastes Generated Off-site
(40 CFR 264.13(c); CHWR 100.41 (a)(3))

Hazardous wastes managed by Rocky Flats are from on-site generators.

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D - PROCESS INFORMATION

SECTION D

PROCESS INFORMATION

D-1 Background (40 CFR 270.14, 15, 16, CHWR 100.41(b))

The Rocky Flats Plant is a Government-owned and contractor-operated facility, which is part of a nationwide nuclear weapons production complex. The Plant is operated under the general direction of the DOE Albuquerque Operations Office (ALO). The prime operating contractor, Rockwell International, was selected to succeed Dow Chemical U.S.A., beginning July 1, 1975, as the prime contractor responsible for operating the Rocky Flats Plant. Waste management programs have existed since Plant operations started in 1952. Hazardous wastes generated at the Plant have been segregated for disposal or recycle since the start of operations.

The types of hazardous wastes generated at the Plant have been relatively consistent throughout Plant history. A small percent of the nonsanitary waste generated at Rocky Flats is defined as RCRA hazardous waste. Hazardous wastes are typically generated on a "one time only" basis and are not ordinarily part of a continuing process waste stream. Exceptions to the "one time only" waste generation, shown in Table D-1, are primarily oil, paint, paint solvents, silver recovery solutions, ECM sludge and halogenated organic solvents. Hazardous wastes which have met EPA criteria for off-site disposal are managed in compliance with CDH, and EPA regulations. Analyses of specific wastes are not performed until the waste generator requests the analyses.

The option to recycle hazardous wastes off-site is used whenever practical. Hazardous waste is sent off-site to be recycled. Shipment to an approved treatment, storage, and disposal (TSD) facility is the second option for disposal.

Table D-1

Waste Listing by Hazardous Code
and Management Method

Listed below are the wastes that are managed at the Rocky Flats site, followed by each waste's EPA hazard code¹. The wastes are contained in drums stored in converted cargo containers as described elsewhere in this Section.

F003, U002	- I, T	D011	- E, T
F001, U211	- T	F005, U220	- I, T
F001, U080	- T	F001, U226	- T
D001, U001	- I, T	F003, U239	- I, T
D002, D003	- C, R, T	D001	- I, T
D001	- E, I, T	D106	- H, T
D009, U151	- E, T	D005	- E, T
D001, F003, U154	- I, T	D001	- I, T
D002, D003	- C, R, T	D002, D003, U134	- C, R, T
F001	- T	D001	- I, T
D002, D003	- C, R, T	D001	- I, T
D002, D003	- C, R, T	F001, F002	- T
D002, D003	- C, R, T	D001, D002, D003,	
D001, D002, D003,		U135	- I, C, R, T
U135	- I, C, R, T	D002, D003	- C, R, T
D007	- E	D003	- R, T
		U028	- I, R, T

¹Key: I = Ignitable.
C = Corrosive.
R = Reactive.
E = EP Toxic.
H = Acutely Hazardous.
T = Toxic.

Table D-2 lists the hazardous waste managed during FY 1984. The volumes listed under the "Generated" column were transferred to Waste Operations during the fiscal year.

Rockwell International is presently pursuing expansion of their hazardous waste storage facilities at Rocky Flats. Currently they are using eight ventilated, modified cargo containers (Figures D-1 and D-2, and photographs presented earlier in Section A). A steel pan is placed inside each cargo container for spill containment. The drums are stored on rollers inside the steel pans. The volume of the pan is sufficient to contain the contents of all the drums placed in the container. Additionally, a 10-foot X 10-foot galvanized storage shed with a concrete floor is located on the eastern side of the Plant for storage of gas cylinders which have been declared hazardous wastes (Figure D-3)

The status of Rocky Flats' operations is summarized as follows:

- o Existing facilities.
 - Laboratory and receipt control.
 - Modified cargo storage containers (8).
 - Gas container storage shed (1).
 - Fluidized Bed Incinerators (1-pilot, 1-full size).
 - Miscellaneous Chemical Destructors (Bench Scale).
 - Silver Recovery.

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- o Planned facilities.
 - Provide additional storage containers on an as needed basis until a permanent container storage facility is constructed.

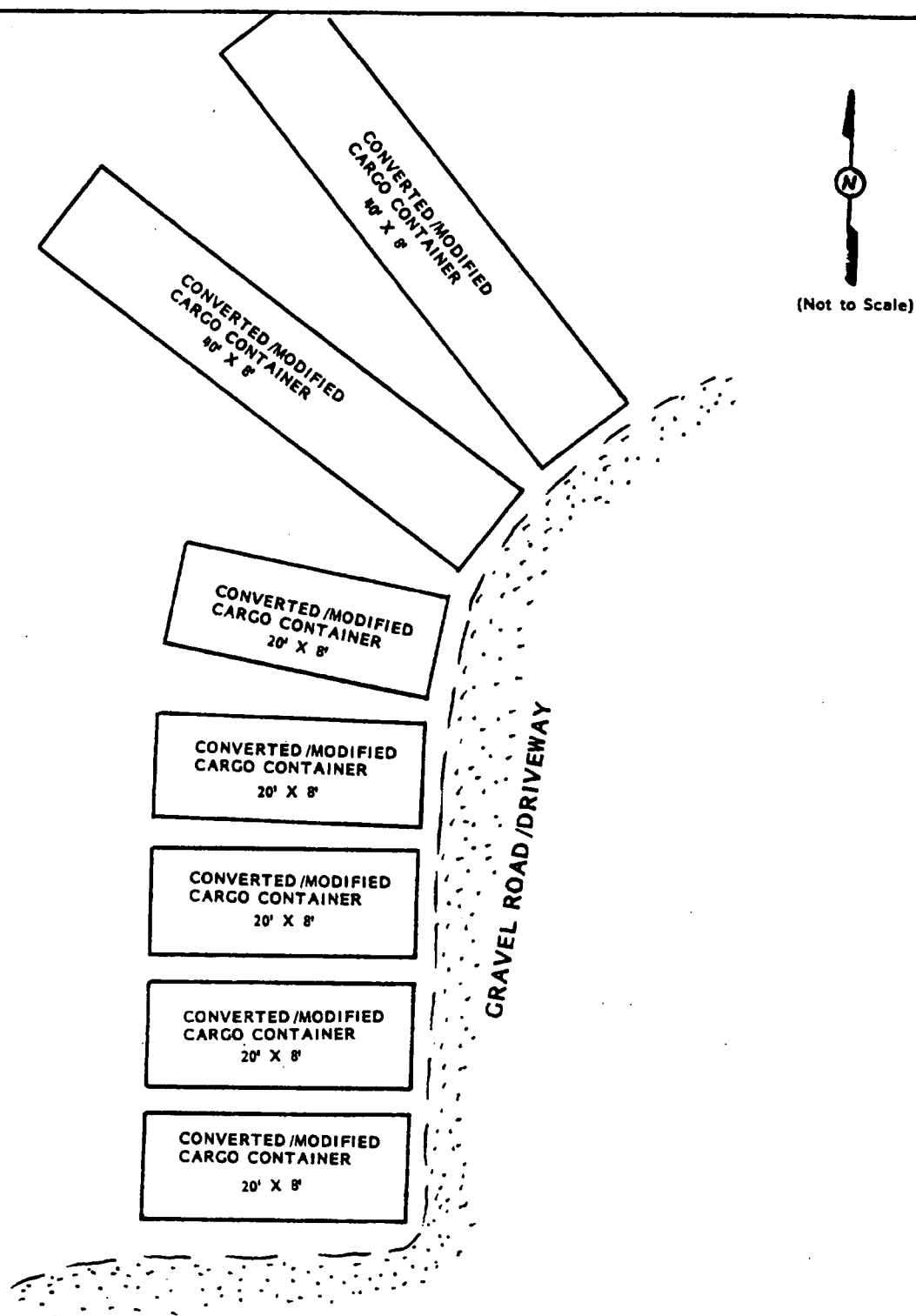


FIGURE D-1
HAZARDOUS WASTE STORAGE FACILITY.

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(not to scale)

CONVERTED/MODIFIED
CARGO CONTAINER
20' X 8'

ASPHALT PARKING AREA

BUILDING 334

FIGURE D-2 AREA 300 HAZARDOUS WASTE STORAGE FACILITY

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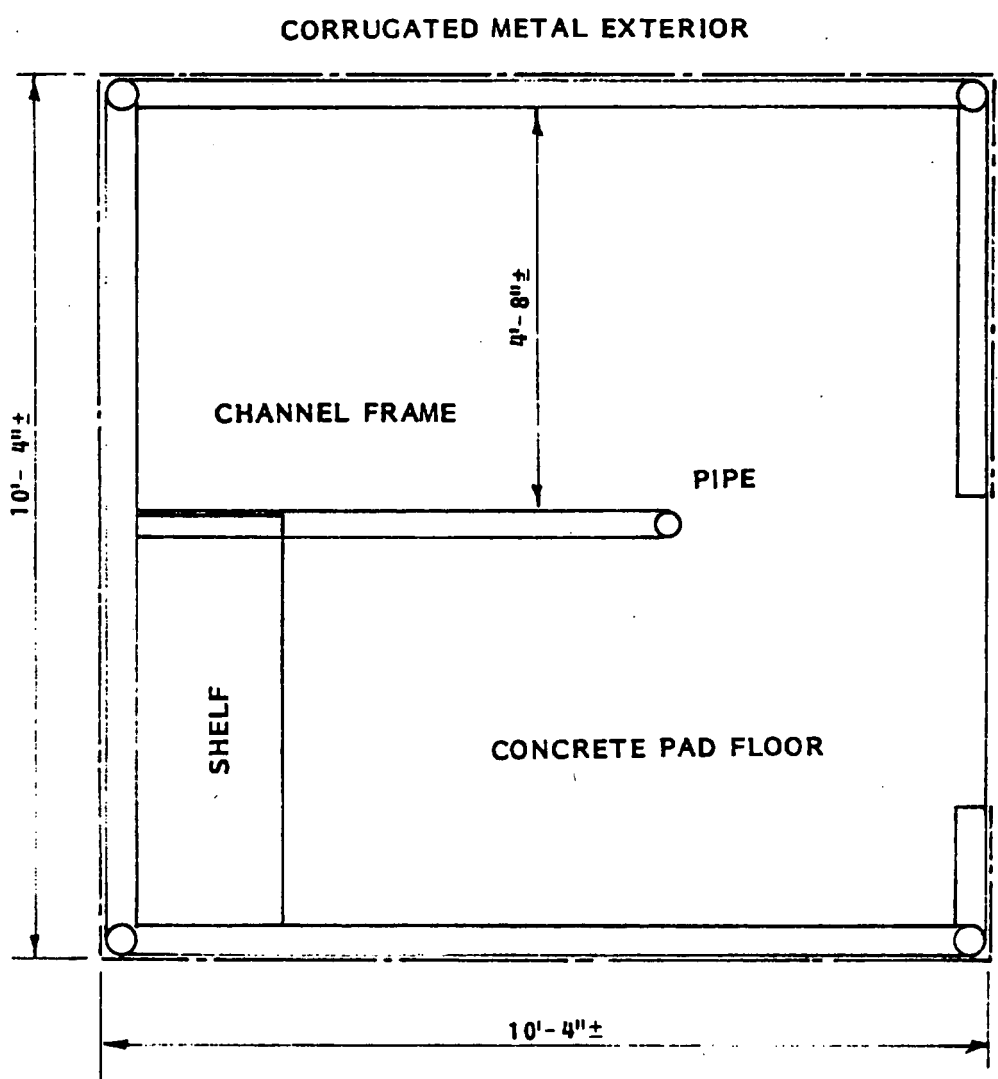


FIGURE D-3
FLOOR PLAN TOXIC GAS SHED , BUILDING 952

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Table D-2

Hazardous Waste Generated, Stored, and Shipped Off-site
for Recycling or Disposal and Yearly Quantities That Are
Expected To Be Generated for Each Waste

Waste	EPA HW Number(s)	Yearly Quantities (Vol.)* (Wt.)**
Acetone	F003, U002	(1,000 gal) (6,588 lbs)
Carbon Tetrachloride	F001, U211	(25 gal) (333 lbs)
Methylene Chloride (Dichloromethane)	F001, U080	(100 gal) (1,106 lbs)
Ethanol	D001, U001	(1,000 gal) (6,583 lbs)
Hydrochloric Acid	D002, D003	(50 gal) (500 lbs)
Magnesium	D001	(1,395 gal) (3,000 lbs)
Mercury	D009, U151	(1 gal) (25 lbs)
Methanol	D001, F003, U154	(500 gal) (3,300 lbs)
Nitric Acid	D002, D003	(5,000 gal) (62,663 lbs)
Tetrachloroethylene (Perchloroethylene)	F001	(500 gal) (6,767 lbs)
Phosphoric Acid	D002, D003	(500 gal) (7,648 lbs)
Sulfuric Acid	D002, D003	(1,000 gal) (15,354 lbs)

*Vol. expressed in gal = gallons, L = liters, cu yd = cubic yards.

**Wt. expressed in lbs = pounds, Kg = kilograms, M.T. = Metric Tons.

Table D-2
(continued)

Waste	EPA HW Number(s)	Yearly Quantities (Vol.)* (Wt.)**	
C			
Silver	D011	(14,307 L)	(108 kg)
Toluene	F005, U220	(500 gal)	(3,615 lbs)
1,1,1-Trichloroethane	F001, U226	(10,000 gal)	(111,673 lbs)
Xylene	F003, U239	(100 gal)	(1,251 lbs)
Used Oil	D001	(25,000 gal)	(175,000 lbs)
Sodium Cyanide	D106	(2 gal)	(30 lbs)
Barium Chloride	D005	(55 gal)	(800 lbs)
Sodium Nitrate/ Potassium Nitrite	D001	(55 gal)	(800 lbs)
Etchant Solution (Acid)	D002, D003, U134	(6,000 gal)	(52,846 lbs)
Used O & M Paint Solvents/Sludge	D001	(7,000 L)	(7.0 MT)
Waste/Surplus O & M Paint	D001	(1,400 L)	(1.4 MT)
Freon 113	F001, F002	(10,000 gal)	(130,521 lbs)
Bromine Trifluoride	D002, D003	(0.0196 lbs)	(2 cu yd)
Chlorine Trifluoride	D002, D003	(0.0098 lbs)	(1 cu yd)

*Vol. expressed in gal = gallons, L = liters, cu yd = cubic yards.

**Wt. expressed in lbs = pounds, Kg = kilograms, M.T. = Metric Tons.

Table D-2
(continued)

Waste	EPA HW Number(s)	Yearly Quantities (Vol.)* (Wt.)**
Hydrogen Sulfide	D001, D002, D003, U135	(0.0196 lbs) (2 cu yd)
HCl and Hydrogen Sulfide Mixture	D001, D002, D003, U135	(0.0098 lbs) (1 cu yd)
Iodine Pentafluoride	D002, D003	(0.0196 lbs) (2 cu yd)
Tungsten Hexafluoride	D003	(0.0342 lbs) (15 cu yd)
Diocetyl Phthalate	U028	(150 gal) (1232 lbs)
ECM Sludge	D007	(15,600 gal.) (195,280 lbs)

*Vol. expressed in gal = gallons, L = liters, cu yd = cubic yards.

**Wt. expressed in lbs = pounds, Kg = kilograms, M.T. = Metric Tons.

Table D-3

Hazardous Waste Generated, Stored, and Shipped
FY 1984

Waste	EPA HW Number	Volumes Generated
Chlorinated Solvents	F001	2,500 liters
Used O&M Paint Solvent/Sludges	D001	7,000 liters
Waste/Surplus O&M Paint	D001	1,250 liters

Table D-4

Projected Hazardous Waste Volumes
 FY 1985 and FY 1986

Waste	FY 1985	FY 1986
Chlorinated Solvents	2,750 liters	3,025 liters
Used O&M Paint Solvent/Sludges	7,700 liters	8,470 liters
Waste/Surplus O&M Paint	1,375 liters	1,513 liters

Existing facilities are those that are presently operational. Planned facilities are those for which government resources are committed and design is in progress. Planned facilities will be brought on-line as funds permit.

The operation plans for the existing and planned facilities are discussed in the subsections that follow.

As noted previously, Table D-1 lists the types of wastes managed at the Rocky Flats facility. The wastes are listed by EPA hazardous waste code.

Figure D-4 is a process flow chart for all wastes managed at Rocky Flats. The waste types managed at the facility are shown.

D-1a Types of Containers

The following types of containers are used at the Rocky Flats facility:

- o DOT 17C (55 gallon) -- Steel.
- o DOT 17E (55 gallon) -- Steel.
- o DOT 17H (55 gallon) -- Steel.
- o Hazardous waste "overpack" drums.

All emptied steel drums are either crushed and sent to a scrap yard or are sent to a drum reclaimer if in good condition (see Appendix D.1 for Procedure For Disposal of Empty Drums).

D-1a(1) Container Compatibility and Management

Wastes at the site are shipped in containers by the generator in accordance with Department of Transportation regulations. Wastes are re-containerized by Rocky Flats in "overpack" drums only if a drum is damaged at the facility.

The Rocky Flats waste handling processes do not require opening of drums except during sampling of containers. On-the-job training reaffirms that containers are not to be opened while in storage. Storage facilities are designed to prevent damage to the containers during storage and handling by providing adequate aisle width, and loading and unloading docks that allow free movement of drums. Incompatible wastes are stored in separate storage containers.

D-2 Laboratory and Receipt Control (Existing and Future)

When a known or suspected source of hazardous waste is identified the generator prepares a Waste Processing Request Form. The Hazardous Waste Coordinator then directs the transfer of the waste to an approved on-site storage facility. A sample is taken for analysis to determine final disposition as hazardous or non-hazardous waste.

D-3 Storage Container (8 Existing) (40 CFR 264.171, 172, 173, 175; CHWR 100.41 (6))

Eight steel cargo containers, of which six measure 20 feet by 8 feet by 8 feet and two measure 40 feet by 8 feet by 8 feet, fitted with air vents, electrical ground, and at least 6-inch deep catch basins are used for storing hazardous waste (see Figure D-1). Halogenated solvents, paints, paint solvents, ECM sludge, silver recovery solvents, and off-specification acids and chemicals are stored in the remote storage area.

One hazardous waste storage container is located near Building 334 (Figure D-2) and is locked when not attended. Seven other hazardous waste storage containers are located north of the main plant complex. The access road and containers are posted "Limited Access" and the cargo containers are locked when unattended. These precautions meet the requirements of 40 CFR 264.14 and CHWR 264.14. Hazardous waste storage locations are shown in Figures D-1 and D-2. Additionally, a gas container storage shed is located on the eastern side of the Plant facilities on a remote site (not near any other facilities). Gases which have been declared wastes are stored in this facility until they are disposed (Figure D-3).

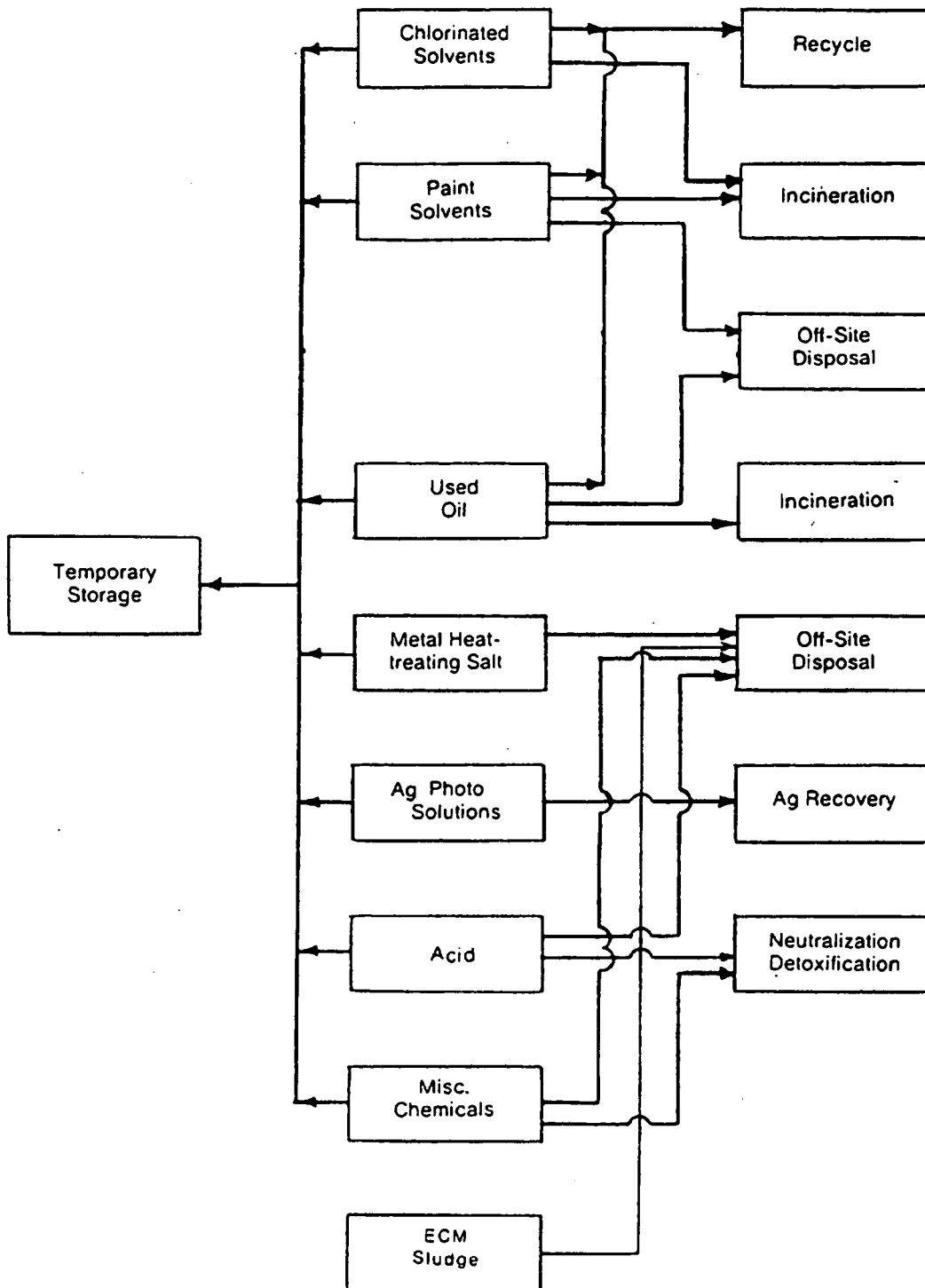


FIGURE D-4 FLOW CHART FOR HAZARDOUS WASTE MANAGEMENT

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In practice, drums are segregated by waste type into marked areas. Incompatible wastes are not stored simultaneously in the same storage container. The area is well separated from the secured property boundaries (as well as from other devices) by more than 50 feet, as required by the National Fire Protection Association. Aisle space, maintained by marked areas, is sufficient to allow access by personnel.

In general, two major categories of solvents are managed, namely:

- o Halogenated solvents.
- o Flammable solvents.

D-4 Treatment Processes (40CFR 264.17; CHWR 264.17)

As noted previously, hazardous wastes generated at the Plant are divided into three types of hazardous material based upon the Federal laws that regulate them: RCRA hazardous waste, TSCA hazardous substances, and NESHAP hazardous substances. Management of each type of hazardous waste is done in accord with the applicable Federal law.

Hazardous wastes are not discharged at the Plant. The waste materials are reused, recycled, or shipped off site for disposal. A flow chart delineating hazardous waste management is given in Figure D-4, and a list of typical hazardous wastes managed annually is given in Tables D-1 and D-2.

Used oil, RCRA regulated metals, halogenated hydrocarbon solvents, and paint solvents are typically recycled, however, the fluid bed incinerator may be used when necessary.

Silver is reclaimed from spent photographic and radiographic fixing solutions. Solutions are transferred by drum from on-site film processing facilities to the two silver recovery units. The reclaimed silver sponge is melted and molded into silver "buttons" and is entered into the Rocky Flats precious metal inventory. The remaining waste is treated with other plant processes wastes.

Photographic solutions are processed to recover silver and the stripped solution is processed and disposed of as hazardous waste. Metal heat treating salt is currently being stored.

Two chemical laboratories on-site have the capability to detoxify small amounts of hazardous waste (bench scale) when needed. Hazardous materials that are treated in this manner include pyrophoric metals, small cylinders of toxic gases, and reactive chemicals. Disposal is on a one-time basis. Records for this treatment are maintained by the Hazardous Waste Coordinator.

Containers and labels for transporting hazardous waste are selected by reference to 49 CFR 172.101, Columns 4 and 5. All hazardous waste packages are marked with the information shown in Figure D-4. Policies regarding the on-site transportation of hazardous waste are provided in the On-site Transportation of Radioactive and Other Hazardous Materials Manual.

Requests for disposal of hazardous wastes are submitted via the Waste Processing Request form. These forms are kept on file. An operating log is maintained for all hazardous wastes. This log describes the generating process, waste material, hazard, volume, and disposition of each hazardous waste. A weekly inspection log is maintained (for 3 years) for the ignitable and halogenated solvents storage area as required by RCRA. Permanent records are kept of those analyses conducted to meet the requirements of RCRA.

Applications for environmental permits other than those specific to RCRA are maintained within the Health, Safety, and Environmental Department. The RCRA Interim Status (TSD Facility) application is kept in the Waste Operations Office.

The Waste Analysis Plan is maintained in the Waste Operations Office.

Job titles, job descriptions, and names of Waste Operations personnel are maintained by the managers of Liquid and Solid Waste Operations.

The RCRA requirements for emergency preparedness were reviewed by the Plant's Emergency Planning Office. The existing Emergency Control Plan, Rocky Flats PMS 16-002, meets the RCRA requirements.

Environmental Analysis and Control also maintains a Spill Prevention Control Document which addresses RCRA requirements, spill prevention and control abatement, and Best Management Practices under NPDES.

Hazardous waste manifests are originated by the Traffic Department and copies are sent to Waste Operations to meet record-keeping requirements. These records are kept for 3 years.

An annual hazardous waste report is prepared. The report is based on the fiscal year, October 1 to September 30. A record of the report is kept for 3 years.

The Rocky Flats Plant uses certified RCRA transporters. Transporters are checked for reliability, and they must have an EPA ID number.

Agreements exist with various State and local authorities regarding response to any significant incident at the Plant. The Rocky Flats Emergency Plan and the Best Management Practices Plan detail notification procedures and actions to be taken by plant personnel.

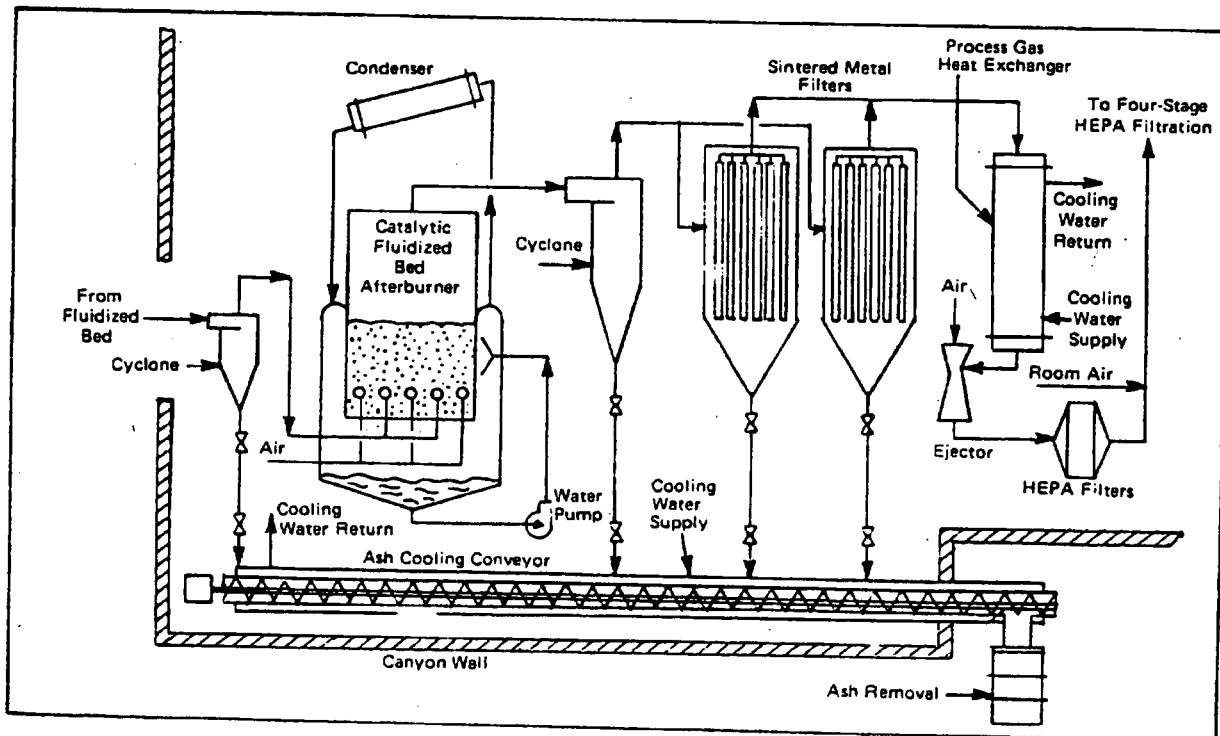
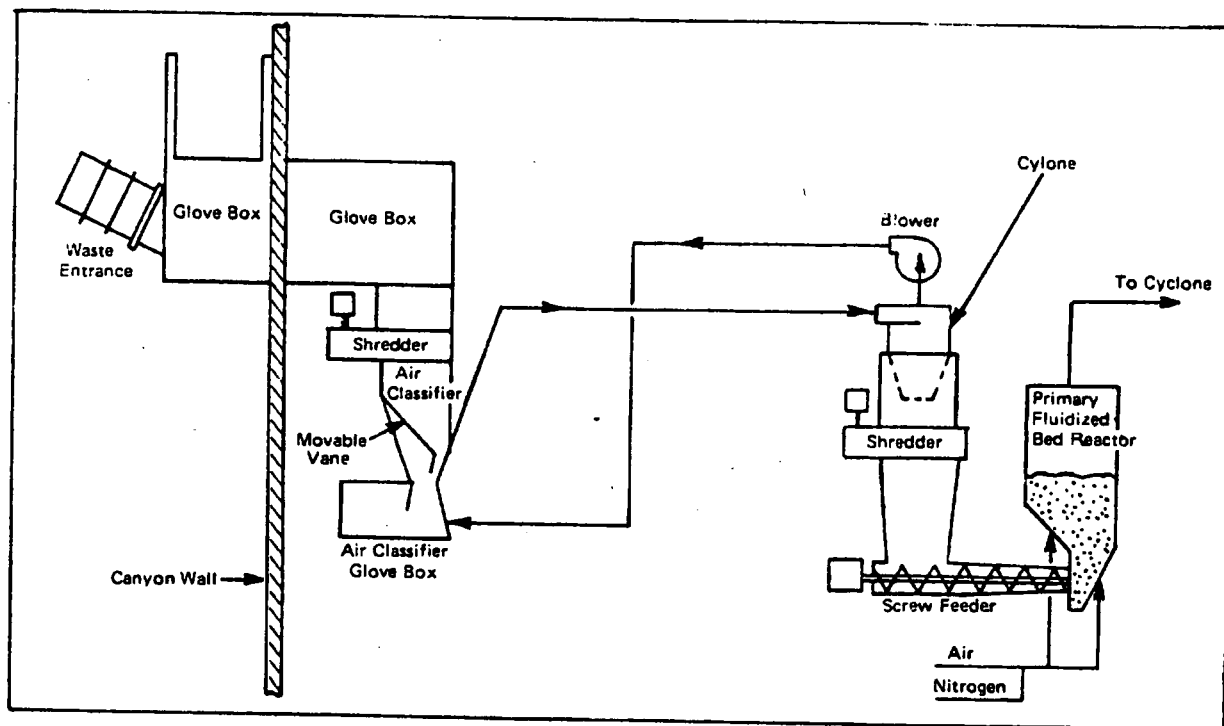


FIGURE D-5 FLOW DIAGRAM OF FLUIDIZED BED INCINERATION SYSTEM

D-5 Fluidized Bed Incinerator (40 CFR 264.340, 264.344, and 264.345; CHWR 264.340, 264.344, and 264.345)

A Fluidized Bed Incinerator (FBI) was installed at the Rocky Flats Plant in 1978. Design philosophy and criteria were formulated to fulfill the needs and objectives of an improved rad waste incineration system. Unique process concepts include low temperature, flameless, fluidized bed combustion and catalytic after burning; in situ neutralization of acid gases; and dry off gas clean-up.

Operating temperature is 550°C, compared to 800-1200°C operating temperature of most incineration systems. High efficiency is achieved at this temperature by utilization of fluid bed agitation and heat transfer and catalytic after burning of hydrocarbons.

Acids produced during combustion are immediately neutralized by sodium carbonate bed media. In situ neutralization reduces equipment corrosion and eliminates the need for off gas scrubbing.

A dry off gas system is utilized in lieu of aqueous scrubbing solutions. This feature eliminates the need to process aqueous scrubbing solutions.

The incinerator can combust hazardous wastes that are highly ignitable and combustible. However, mixed solid waste has also been incinerated through test burns. The waste is pumped directly into the primary reactor for incineration (see Figure D-5). After start-up preheating, waste combustion maintains the operating temperature from the waste material without the need for an auxiliary fuel. Cyclone separation and sintered metal filtration are utilized to remove ash and particulate from the off gas before it passes through high efficiency filters and discharges into the building exhaust system.

D-5a Trial Burn

The conception of the FBI incinerator began in 1974 when laboratory scale incinerator burned 37,500 kgs of solid and 12,000 kgs of liquid. The pilot scale development work took place as early as 1972.

Numerous trial burns of hazardous materials were conducted beginning in 1978. In 1980, the EPA conditionally approved DOE application to destroy one gallon of PCB. The burn was conducted on May 19 with samples collected and split between EPA and Rockwell International laboratories. Based upon the results of the trial burn, EPA's analysis indicated that 99.9999 percent of the PCB were destroyed.

Therefore, on Marh 25, 1982 DOE Rocky Flats was issued an Emission permit (C-13,022) for the FBI from the Colorado Department of Health -Air Pollution Control Division.

D-5b Incinerator Performance

Several process and equipment changes were made during the initial operational testing period. Some of the equipment performed as originally designed and some had to be replaced or modified.

Areas of excellent performance includes the liquid feeding system, primary reactor and tramp metal discharge system, cyclone separators, ash cooling conveyor, air ejector, and instrumentation and data aquisition system. Problems were encountered with the coarse waste shredder, air classifier, afterburner gas distributor, sintered metal filters, and high speed blowers. Equipment malfunctions were attributed to various factors, but the majority were associated with design scale-up uncertainties and the unsuitability of some commercially purchased items. Several modifications were necessary to achieve an operable and reliable system. The most extensive modifications were the redesign and replacement of the afterburner gas distributor, replacement of the high speed blowers with an air jet ejector and installation of additional sintered metal filters. With the revisions made through 1982, the unit became fully operational.

D-5c Engineering Drawings

The process concepts were presented earlier in this section. Additional detailed drawings and information are presented in Figure D-6, D-7, and D-8.

D-5d Sampling

Off gas from the FBI is analyzed for oxygen carbon dioxide, carbon monoxide, and total hydrocarbon content. A Lear Siegler, Model CM 50 in-line oxygen analyzer monitors oxygen concentrations in the exhaust gas. The probe for this instrument is located in the exhaust duct immediately upstream from the gas cooler. The probe operates on a zirconium oxide fuel cell principle with probe voltage being proportional to the difference between oxygen concentration in the exhaust gas and the normal atmospheric concentration of oxygen. Readout is shown on a local meter and the CRT in the control room. Carbon dioxide, carbon monoxide, and hydrocarbons are all monitored by a Rockwell designed exhaust gas sampling system. The system samples, conditions, and distributes exhaust gas to a Beckman, Model 400, total hydrocarbon analyzer and an Infrared Industries, Inc., Model IR-702-041, dual carbon monoxide - carbon dioxide analyzer.

FIGURE D-6 EQUIPMENT AND FLOW LEGEND

PART	EQUIPMENT LIST
100	REACTION
200	DRY LIFT
300	CLASSIFIED GLOWER
400	FEED SCREW ASSEMBLY
500	REACTION ASSEMBLY FLUID BED
600	FEED STAGE CYCLONE
700	FEED STAGE CYCLONE
800	RECORD STAGE CYCLONE
900	RECORD STAGE CYCLONE
1000	CLASSIFIED CYCLONE
1100	HEATING
1200	ARM CO. LONG CONVEYER SCREW
1300	CONVEYER
1400	PERMANENT CONVEYER GLOW BOX
1500	SHARP METAL GLOW BOX
1600	RECEIVER GLOW BOX
1700	RECEIVER GLOW BOX
1800	RECEIVER GLOW BOX
1900	RECEIVER GLOW BOX
2000	RECEIVER GLOW BOX
2100	RECEIVER GLOW BOX
2200	RECEIVER GLOW BOX
2300	RECEIVER GLOW BOX
2400	RECEIVER GLOW BOX
2500	RECEIVER GLOW BOX
2600	RECEIVER GLOW BOX
2700	RECEIVER GLOW BOX
2800	RECEIVER GLOW BOX
2900	RECEIVER GLOW BOX
3000	RECEIVER GLOW BOX
3100	RECEIVER GLOW BOX
3200	RECEIVER GLOW BOX
3300	RECEIVER GLOW BOX
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4000	RECEIVER GLOW BOX
4100	RECEIVER GLOW BOX
4200	RECEIVER GLOW BOX
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4600	RECEIVER GLOW BOX
4700	RECEIVER GLOW BOX
4800	RECEIVER GLOW BOX
4900	RECEIVER GLOW BOX
5000	RECEIVER GLOW BOX
5100	RECEIVER GLOW BOX
5200	RECEIVER GLOW BOX
5300	RECEIVER GLOW BOX
5400	RECEIVER GLOW BOX
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7800	RECEIVER GLOW BOX
7900	RECEIVER GLOW BOX
8000	RECEIVER GLOW BOX
8100	RECEIVER GLOW BOX
8200	RECEIVER GLOW BOX
8300	RECEIVER GLOW BOX
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9100	RECEIVER GLOW BOX
9200	RECEIVER GLOW BOX
9300	RECEIVER GLOW BOX
9400	RECEIVER GLOW BOX
9500	RECEIVER GLOW BOX
9600	RECEIVER GLOW BOX
9700	RECEIVER GLOW BOX
9800	RECEIVER GLOW BOX
9900	RECEIVER GLOW BOX
10000	RECEIVER GLOW BOX

VALVE	VALVE LIST
10	10" PRESSURE RELIEF VALVE
11	11" BALL VALVE
12	12" BALL VALVE
13	13" BALL VALVE
14	14" BALL VALVE
15	15" BALL VALVE
16	16" BALL VALVE
17	17" BALL VALVE
18	18" BALL VALVE
19	19" BALL VALVE
20	20" BALL VALVE
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FLOW SYMBOL	NOTATION
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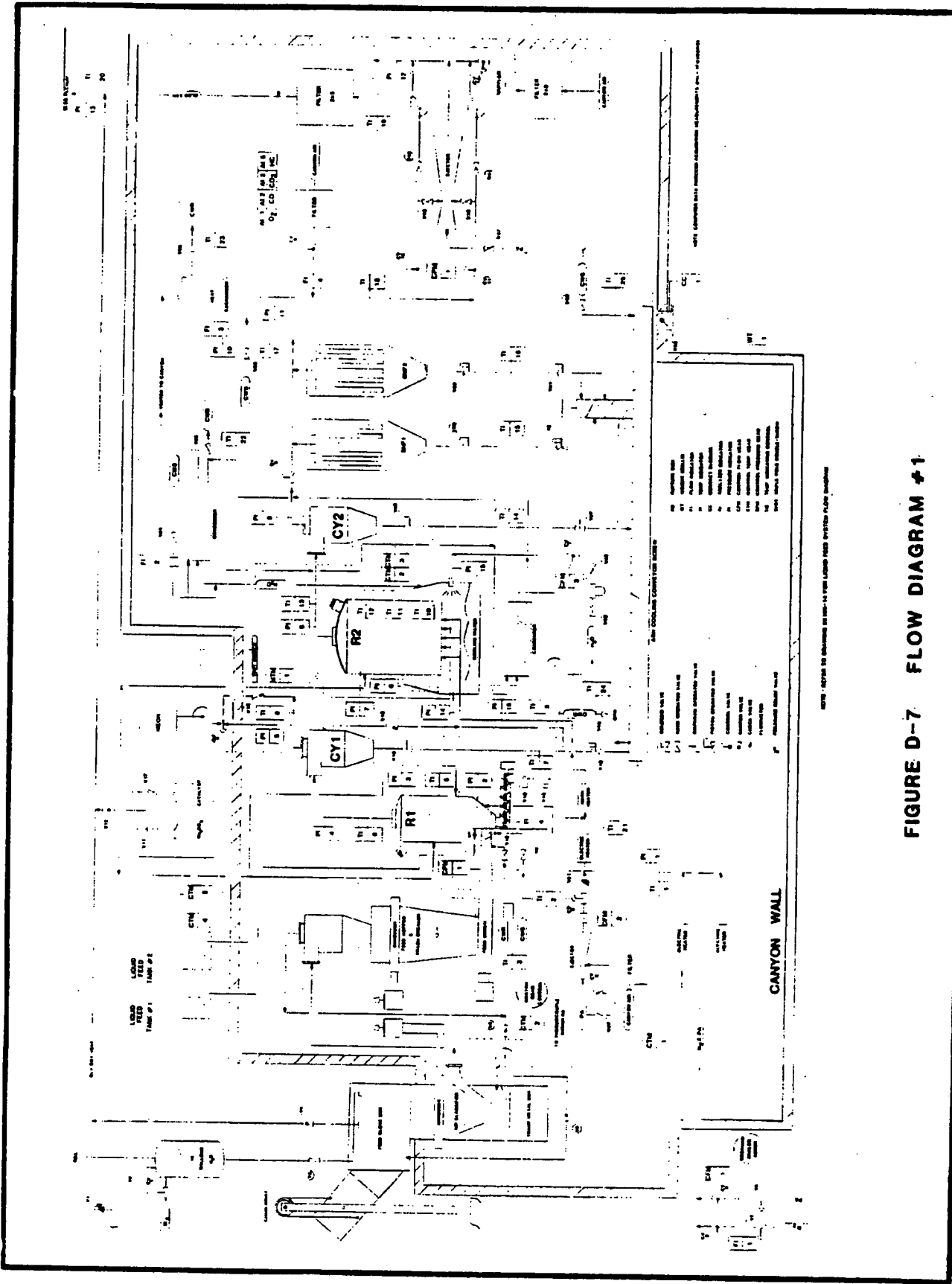
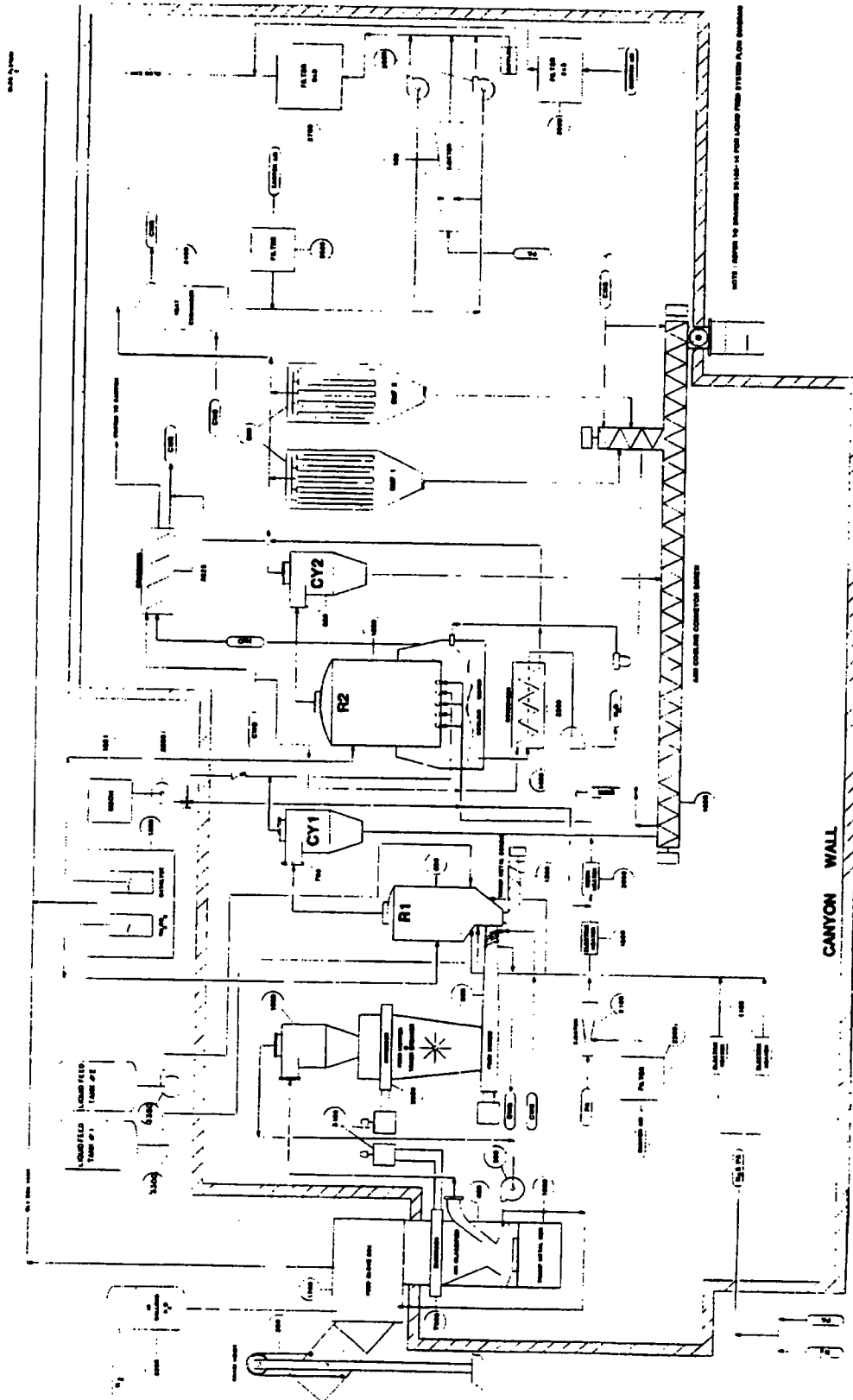


FIGURE D-7 FLOW DIAGRAM #1



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A provision has been made for the future addition of a hydrogen chloride and a sulfur dioxide monitor. The hydrocarbon analyzer uses a flame ionization technique to identify exhaust gas hydrocarbon concentrations. The carbon monoxide - carbon dioxide analyzer is a dual monitoring, non-dispersive infrared type that measures both gas concentrations simultaneously. Concentration values are continuously displayed on local meters and on the CRT in the control room.

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SECTION E
GROUNDWATER MONITORING

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E - GROUNDWATER MONITORING SYSTEMS

There are no regulated units as defined in CHWR 260.90 described in this application. The hazardous waste storage and treatment units are exempt from the groundwater monitoring requirements as stated in 40 CFR 264.90, 264.1, and 261.6 (a)(2).

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SECTION F

PROCEDURES TO PREVENT HAZARDS

SECTION F

PROCEDURES TO PREVENT HAZARDS

The information provided in this section is submitted in accordance with the requirements of 40 CFR 270.14(b)(4),(5),(7), (8), and (9) and CHWR 100.41(a)(4). These requirements address the following subject areas:

- o General security provisions.
- o Inspection schedule.
- o Spill prevention, control, and countermeasures and best management practices.
- o Prevention of accidental ignition or reaction of ignitable, reactive, or incompatible wastes.

F-1 Security (40 CFR 270.14(b)(4))

F-1a Security Procedures and Equipment

F-1a(1) Twenty-four Hour Surveillance

Rockwell International, Rocky Flats Plant provides 24-hour site security by means of a Plant Security Force. Guards are stationed at the entrances to the Plant 24 hours per day to monitor vehicle and personnel traffic into the area. Gates are kept closed at all times and opened only for authorized traffic.

One hazardous waste storage container and the gas storage shed are located within the plant security fence. They are locked when unattended.

Seven other hazardous waste storage containers are located outside the main security fence but within the boundary fence and are in the purview of the Plant's Security Personnel. The access road is posted "Limited Access" and the cargo containers are locked when unattended. A three strand cattle fence serves as a barrier to unauthorized persons and large animals.

F-1a(2) Access to Site

Access to all container storage facilities is controlled. Keys to the containers are maintained by the Hazardous Waste Coordinator. The entire Rocky Flats Plant site is considered a high security area. The use of deadly force is authorized, and this fact is posted around the Plant site.

F-1a(3) Warning Signs

Signs which are legible from a distance of 25 feet are posted in active portions of the storage area. These signs are visible from all approach angles and state "Danger -- Unauthorized Personnel Keep Out." Within the waste storage and handling areas "No Smoking - Hazardous Waste" signs, which are also legible for a distance of 25 feet, are placed at strategic locations. All signs

are printed in English. A photograph of the posted sign is presented in Appendix F.1.

F-1a(4) Communications

Rocky Flats maintains a communication/alarm network consisting of:

- o Public telephones.
- o Two-way radios.
- o Alarm systems.

All personnel within the facility have access to one or more of the communication systems listed. Each permanent structure and all trailers have a minimum of one telephone.

Access to public telephones by all site personnel is direct or indirect. Plant Security personnel utilize two-way radios for communication.

F-2 Inspection Schedule

F-2a General Inspection Requirements

Rocky Flats conducts regular inspections of the storage areas for structural deterioration, uncontrolled runoff, spills, and other discharges that could cause or lead to the release of hazardous waste constituents. The purpose of the inspections is to detect any potential problems that may arise. Records of inspections and the inspection schedule are routinely kept on-site at the storage area.

F-2a(1) Types of Problems

Table F-1 gives the present schedule for inspecting monitoring equipment, safety emergency equipment, security devices, structural equipment, and the storage areas. This schedule and the listing of inspection locations may be periodically revised during the life of the permit to reflect operational and administrative requirements. The items listed are considered important because of their role in preventing, detecting, or responding to environmental or human health hazards. Provided with each item is a list of possible problems that are checked as part of the inspections.

F-2a(2) Frequency of Inspection

The frequency of inspections is based on the need and the effectiveness of an inspection to prevent the occurrence of an uncontrolled event. Inspections are typically performed at the intervals presented in Table F-1.

Inspections are performed by experienced and qualified Rocky Flats employees. If any malfunctions, deteriorations, or operating discrepancies are noted during the inspection, the inspector submits to his supervisor a description of the problem and the suggested procedure to eliminate the discrepancy. The appropriate organization is notified in the case of remedial action implementation.

Table F-1

Present Inspection Schedule

Location	Minimum Frequency	Potential Problems
1. Gates/fence/warning signs/radio/telephone/lighting	Weekly	Functional, damage, deterioration
2. Container storage areas	Weekly or after storm	Spills, structural integrity of containers
3. Personnel safety/spill and emergency response equipment	Weekly or prior to and after use	Accessibility, inventory, malfunction, certified checkout, cleanliness, usage, availability
4. Miscellaneous	Weekly or after storm	Malfunction, blockage, integrity, spillage
5. Hazardous Waste Treatment Areas	Weekly	Leaks, spills, fires, fumes

F-2b Specific Inspection Requirements

F-2b(1) Gates/Fence/Warning Signs/Radio/Telephone/Lighting/ Inspection

All security measures taken at the site to prevent entry onto the site by unauthorized individuals are tested and verified on a regular basis. The security fence system is periodically checked for integrity. All access gates are monitored for ingress and egress. Any attempt to breach this barrier by human or animal intruders is noted and rectified.

Facility communications are checked for proper operation, and service records for the radio equipment are checked periodically. External communication checks are also performed.

F-2b(2) Hazardous Waste Area Inspection

Figure F-1 details the typical inspection form used to assess the various hazardous waste storage and treatment areas. The storage areas and storage containers are checked for aisle space and stacking violations, container labeling, the presence of spilled material, leaking drums, condition of locks, storage surface, and structure integrity. If hazardous conditions exist, remedial activity is instituted to control and clean up the spread of material. These inspections are designed to comply with 40 CFR 264.174 and CHWR 264.

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FIGURE F - 1 (Cont.)

F-2b(3) Safety Equipment Inspection

The Plant Fire Department maintains an inspection program. No fire equipment is kept in the waste storage and handling area. The Plant Fire Department will respond to any fire and any hazardous waste spills. Equipment is provided in other localized areas as required. Safety gear is available for immediate use to prevent adverse health effects and is with responding emergency equipment. First aid equipment is present where the potential for accidents is greatest. First aid supplies are checked for adequate stock.

F-2b(4) Miscellaneous Inspections

The Rocky Flats facility roads are inspected to ensure the safe movement of materials and the structural integrity of the roadways. The runoff water diversion or collection facilities are inspected for integrity and operation. Runon/runoff control and drainage systems for the site, including specific units, are assessed as to their operational integrity.

F-3 Preventive Procedure, Structures, and Equipment

F-3 F-3a Cargo Container Storage

Under the direction of the Hazardous Waste Coordinator the transportation vehicle proceeds to the storage area. All containers are removed from the vehicle by hand or by utilizing designated mechanical equipment. Each container is visually reinspected at this stage to check for integrity and to make

certain that all regulatory and facility labelling is complete with respect to container identity. All containers that do not conform to these guidelines will be set aside for further processing and/or repackaging, if necessary, at the direction of the Hazardous Waste Coordinator. Those containers that cannot be properly or satisfactorily identified will be returned to the generators.

Upon acceptance at the storage facility the containers are placed inside the lined cargo containers for storage. Prior to initiating work in the storage area all personnel wear appropriate safety equipment as detailed by the Hazardous Waste Coordinator or his designated assistant. The area is inspected for proper ventilation and the presence and availability of emergency equipment.

F-3b Equipment Maintenance

Over the past years Rocky Flats has utilized a maintenance scheduling and recordkeeping system to ensure proper operation of hazardous waste equipment. This scheduling of routine procedures ensures that all equipment is in operational condition. These maintenance activities are conducted by the various equipment custodians.

At the completion of an activity requiring equipment usage, the dispatcher notes on the equipment record any equipment failures and notifies the maintenance personnel of the defect, which is

then scheduled for repair. This system of maintenance maximizes the level of equipment availability and operation. The preventive maintenance program is also used to project the need and the necessary availability of spare parts for the timely repair of key facility equipment.

F-3c Protective Personnel Equipment

Plant personnel are directed by Industrial Hygiene and Industrial Safety to wear the appropriate safety equipment for a specific working area. Each employee is responsible for obtaining and ensuring the proper fit of each piece of safety equipment. If an employee notices a defect, it is that employee's responsibility to replace the equipment and notify the appropriate personnel to facilitate timely repair. Each employee will also be responsible for safe operational activities. If it is determined that a particular task does not comply with safe operating practices, the employee is responsible for notifying each individual up the chain of command as to the nature and the corrective action necessary for the safe completion of the task in question. To facilitate this process all employees are trained in the safe operating practices to be used in handling hazardous materials.

Rocky Flats retains onsite a large inventory of safety and respiratory equipment for use in handling the wastes that are enumerated in Sections A, C and D of this application.

F-3d Storage Container Area

The physical structure, equipment, and operating practices of the storage container area are designed in a manner that will contain releases of material, create a safe working environment, and provide the expedient and proper remedial activity for possible problematic events. The cargo containers are lined with a steel pan capable of holding the entire contents of the drums in the container. The storage containers are designed for adequate ventilation to prevent the accumulation of vapors that could cause explosive or unsafe working conditions.

Equipment and operating practices in the storage container area are such that when processing ignitable materials, open flames are removed from the working area and other possible ignition or spark sources are minimized. Spill control equipment is located at this facility.

F-3e Runoff Control

Site drainage and runoff control are designed to meet a 10-year, 24-hour storm. The determination of these quantities is based on the logic method of calculation and are "worst case" determinations. Figure B-5 details the overall site runoff drainage pattern system.

F-3f Runon Control

The design of site operations is to minimize the exposure of waste storage and handling portions of the facility to runon

waters. The waste drums are stored in sealed cargo containers lined with a 6-inch deep pan. Because of the site topography and grading it is unlikely that runoff water would be of sufficient quantity to enter the container storage units.

F-3g Water Supplies

To prevent the contamination of domestic drinking supplies, the runoff and run-on control systems, as well as the waste handling operations, have been optimized. Any hazardous waste storage site improvements will include sloping and grading to prevent uncontaminated offsite runoff from entering the site, as well as contaminated onsite surface liquids from leaving the site as contaminated runoff. All drainage is covered via surface sloping handled through sedimentation basins operated in series.

No water supply wells are located within 1,000 feet of the cargo containers.

F-4 Procedures for Handling Ignitable, Reactive, Corrosive, Toxic, and Incompatible Wastes

F-4a General Hazards

F-4a(1) Ignitable Wastes

The processing, storage, and disposal of ignitable wastes pose various handling problems. The following are areas of concern when processing such wastes:

Ignition: Many wastes are ignitable and pose a serious fire hazard. All operations, equipment, and nearby combustion sources must be managed so that the possibility of ignition is minimized.

Explosion Hazard: Some ignitable materials generate enough vapors or upon ignition generate vapors rapidly enough to cause an overpressure and pose a possibility of rapid combustion. Wastes that display this potential will be modified or treated in a manner that renders them noncombustible prior to disposal.

Toxic Inhalation Potential: Many of the materials that are ignitable generate large quantities of vapors. These vapors may pose an inhalation threat to individuals involved in processing the waste. Proper respiratory equipment will be used by all personnel involved in handling these materials.

Toxic Skin Absorption: Some compounds that display ignitability can also be absorbed by the skin. As an example, kerosene has this property and has an OSHA set exposure limit. Each ignitable material must be assessed for skin exposure limits and the appropriate safety equipment must be worn.

Toxic Ingestion: Some organic compounds that are ignitable will, upon ingestion, dry and crack the epithelial lining of the gastrointestinal tract or dissolve the tissue. These situations lead to bleeding and further spreading of toxic materials to the bloodstream, causing further damage.

These hazards are to be considered prior to processing waste materials that exhibit such properties.

Some of the ignitable materials may also have a solvent property that affects the storage, transfer, and treatment vessels, thereby increasing the possibility of structural attack.

F-4b Handling Procedures to Prevent Hazards

F-4b(1) Ignitable Wastes

Prior to handling the material, all personnel will be directed by the Hazardous Waste Coordinator, Industrial Hygienist, or their assistants to wear the appropriate safety and respiratory equipment. Personnel will then survey the work area for any sources of ignition or open flame. These sources will be removed from the work area. If handling equipment is to be used, only equipment that is compatible with the material will be used, such as diesel-powered machinery. Transportation vehicles will be secured with chocks to prevent movement. Where there is a high potential for spills, work will be performed within diked areas. Each work station will be equipped with the appropriate first aid and fire fighting equipment to handle minor incidents. Personnel will also be in contact with and notify emergency response personnel and the area dispatcher by two-way radio in the event of an uncontrolled event.

F-4b(2) Reactive Wastes

Prior to handling the material, all personnel will be directed by

the Hazardous Waste Coordinator, Industrial Hygienist, or their assistants to wear the appropriate safety and respiratory equipment. Personnel will next survey the work area for any potential problems or situations that could lead to an uncontrolled event (such as acids in close contact with sulfide materials). If the material is reactive with the addition of heat, sources of heat above the specified level for the material must be removed. Those reactive materials that are subject to rapid combustion will be handled appropriately to minimize the effects of such an event. The methods for handling each waste material or class of material will be specified prior to handling. In work areas dealing with reactive materials the appropriate first aid, fire protection, and remedial action equipment will be present at the work site prior to initiation of work.

F-4b(3) Incompatible Wastes

No incompatible wastes will be stored or solidified with other incompatible wastes at the Rocky Flats site. The Hazardous Waste Coordinator determines compatibility prior to storage of the material at the Rocky Flats facility. Suspect individual waste shipments will be sampled and tested for compatibility prior to contact with other wastes or equipment. Incompatible wastes will be segregated from wastes that would cause a reaction, vapors, fire, or explosion.

F-4b(4) Corrosive Wastes

Prior to handling the material, all personnel will be directed by the Hazardous Waste Coordinator, Industrial Hygienist, or their assistants to wear the appropriate safety and respiratory equipment. If the material is incompatible with any other material handled at this site, these materials will be segregated. The methods for handling this material will be specified prior to handling. In work areas dealing with corrosive materials the appropriate first aid, safety, and remedial action equipment will be present at the work site prior to initiation of work.

F-4b(5) Toxic Wastes

Prior to handling the material all personnel will be directed by the Hazardous Waste Coordinator, Industrial Hygienist, or their assistants, to wear the appropriate safety and respiratory equipment. The methods for handling of these materials will be specified prior to handling. In work areas dealing with toxic materials the appropriate first aid, safety, and remedial action equipment will be present at the work site prior to initiation of work.

F-4c Management Practices

F-4c(1) Ignitable Wastes

Rocky Flats uses a number of quality assurance and document tracking systems to facilitate the management of containerized ignitable wastes.

After acceptance the wastes that are to be stored are taken to the storage facility. The containers are entered on an Operations Report. The storage record tracks the location of each container or group of containers from the date of acceptance for disposal to final disposition. All containers are stored segregated from other waste types with appropriate aisle space in each storage container and in a manner that permits inspection of surfaces for possible loss of containment.

Containers that are disposed of are recorded on the Operations Report. These procedures are used to ensure the proper handling, storage, and disposal of containerized wastes while creating and supporting a safe working environment.

F-4c(2) Containerized Reactive Wastes

Rocky Flats utilizes a number of quality assurance and document tracking systems to facilitate the management of containerized reactive wastes. After acceptance the material will be properly stored. The containers that are to be stored will be processed in a fashion similar to the ignitable wastes as set forth in subsection F-4c(1). Care will be taken to ensure that the specific reactive material is not placed close to other materials that may create an uncontrollable event.

F-4c(3) Containerized Corrosive Wastes

Rocky Flats utilizes a number of document tracking systems to facilitate the management of containerized corrosive wastes.

Containers are checked and inspected.

After acceptance the material will be properly stored. The containers to be stored will be processed in a fashion similar to the ignitable wastes as set forth in subsection F-4c(1). All containers will be stored segregated from other waste types with appropriate aisle space and in a manner that permits inspection of surfaces for possible loss of containment.

Containers that are disposed of are recorded on the Operations Report. These procedures are used to ensure the proper treatment, storage, and disposal of containerized wastes while creating and supporting a safe working environment.

F-4c(4) Containerized Toxic Wastes

Rocky Flats utilizes a number of document tracking systems to facilitate the management of containerized toxic wastes. Containers are checked and inspected.

After acceptance the material will be properly stored. The containers to be stored will be processed in a fashion similar to the ignitable wastes as set forth in subsection F-4c(1). All containers will be stored segregated from other waste types with appropriate aisle space and in a manner that permits inspection of surfaces for possible loss of containment.

Containers that are disposed of are recorded on the Operations Report. These procedures are used to ensure the proper

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creating and supporting a safe working environment.

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SECTION G
CONTINGENCY PLAN

SECTION G
CONTINGENCY PLAN

G-1 Introduction

This Contingency Plan has been developed to meet the requirements of CHWR 100.41a(7) and 264, Subpart D.

G-1a Background

The Rocky Flats Plant covers almost 11 square miles, occupying Sections 1 through 4 and 9 through 15 of R 70W, T 2S of Jefferson County, Colorado. It is located 16 miles northwest of Denver and 9 to 12 miles from the communities of Boulder, Golden, and Arvada. Access to the site is from Colorado highway 93 on the west side, or Indiana Street on the east.

G-1b Scope and Objectives

All generators of hazardous wastes are responsible for developing a Contingency Plan. The Plan specifies actions to effectively minimize and abate hazards to human health and the environment from fire, explosion, emission, or discharge of hazardous waste constituents to air, soil, surface water, or groundwater.

The Rocky Flats facility provides storage and treatment of hazardous wastes generated on-site. The contingency plan addresses the management of these hazardous waste units. The Contingency Plan updates the Best Management Practice and Emergency Response Plan prepared for the Rocky Flats facility

in 1983. The Plan will be further updated as processes and facilities change in the future. The Contingency Plan has been prepared in accordance with RCRA 40 CFR 264, Subpart D, requirements and the comparable Colorado Department of Health regulations and policies.

G-2 Facility Description

G-2a Site Layout

Figures B-1 through B-8 show the major features at the Rocky Flats site. These features include all existing buildings and roadways, surface waters and flood plains, drainage patterns, surrounding land use, etc. No public or private water supply is located at the site.

G-2b Site Drainage

Figure B-5 depicts the surface water drainage patterns for the Rocky Flats facility. Storm drains on-site and all other drainage is handled through surface sloping to a series of swales and drainageways. Generally, surface water drainage is to the east and is handled through a series of sedimentation ponds until storm water discharges to a natural drainage ditch.

G-3 Facility Operations

G-3a Nature of Facility Operations

As previously noted, Rocky Flats operates a hazardous waste storage facility. Hazardous wastes are stored in cargo containers

with a stainless steel pan liner until the waste can be shipped off-site for disposal or treated.

G-3b Waste Management

As described in the Sections A,C and D, the hazardous wastes handled by this facility are from on-site sources. Rocky Flats stores the following categories of waste:

- o Ignitable (I) -- Waste solvents.
- o Corrosive (C) -- Acids and bases.
- o Reactive (R) -- Reactive gases, acids and miscellaneous laboratory wastes.
- o Toxic (T) -- Specific listed hazardous wastes.
- o Acutely Hazardous (H) -- Cyanide and other EPA listed "P" wastes.
- o EP Toxic (E) -- Wastes contaminated with heavy metals that can leach under simulated landfill conditions.

Depending on the waste characterization, the wastes are stored temporarily and/or treated prior to off-site transport and disposal or reuse. Typically, drummed wastes are delivered to the modified cargo container storage facility by truck and are off-loaded by hand prior to placement in storage. Runoff is being collected from the storage area in the series of holding ponds on the plant site (Section B). Spills that occur during transfer between the storage and waste generating areas will be contained with absorbent material and packaged for off-site disposal. Spills at the waste treatment areas, which are inside buildings, are contained and cleaned up for disposal.

Drummed wastes staged in the drum storage area are approximately segregated as follows:

- o Ignitable/solvents.
- o Other.

The containers are properly packaged, marked, and labelled when they are placed in storage.

Stacking of drums is not permitted. Aisle space is maintained to provide access and an isolation zone between waste types. Each waste type is provided a separate storage area. The storage containers are equipped with steel catch/drip pans that are designed to contain the entire volume of all drummed waste that is stored in them. Spill cleanup materials stored at the storage area include absorbent material, shovels, brooms, and empty recovery drums.

G-4 Pollution Incident Prevention Practices

G-4a Inspection and Monitoring

G-4a(1) Hazardous Wastes

Rocky Flats conducts weekly inspections of the waste storage area. The Hazardous Waste Coordinator is responsible for having this weekly inspection performed and for completing the inspection report. This written report is recorded on inspection log sheets (see Figure G-1).

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FIGURE G - 1 (Cont.)

Typical problems that may be encountered with each inspection item are provided on log sheets to serve as a reminder to the inspector and to ensure a complete inspection. The inspector is required to check the status of each item and indicate whether its condition is acceptable or unacceptable. Observations are made as to the number of containers, condition of the containers, aisle space, proper segregation, etc.

If the status of a particular item is unacceptable, appropriate and complete information will be recorded including the date and nature of the required remedial action or repair.

Inspection logs are maintained for each calendar year. After an inspection is completed, each log sheet is filed. As required, records of inspections are kept for at least 3 years following the date of the inspection.

G-4b Housekeeping and Maintenance

G-4b(1) Hazardous Materials

Specific area operational personnel are responsible for keeping their areas neat and in order. Chemical spills are cleaned up by plant personnel to prevent discharge or transport to other areas. Spilled materials are identified and noted by the plant personnel doing the cleanup.

G-4b(2) Hazardous Wastes

If inspections reveal that a hazard is imminent or has already occurred, remedial action will be taken immediately. Rocky Flats inspection personnel will notify the Hazardous Waste coordinator and any other appropriate people internally and initiate remedial actions. In the event of an emergency involving the release of hazardous constituents to the environment, efforts will be directed toward containing the hazard, removing it, and subsequently decontaminating the affected area.

If nonemergency maintenance is needed, it will be completed as soon as possible to preclude damage and the need to implement the Contingency Plan.

G-4c Material Compatibility

Hazardous wastes are stored in proper containers (See Section D for container descriptions).

G-4c(2) Hazardous Wastes

The initial responsibility for ensuring waste/container compatibility is addressed by the generator who packages the waste material for storage in the storage area. The Hazardous Waste Coordinator will notify a generator if improper container packaging practices need to be corrected. They will notify the generator to initiate corrective action. For those waste materials arriving at the storage area in improper containers, the Hazardous Waste Coordinator will either repackage the

material into compatible or proper containers, or return the material to the generator.

Ignitable liquids, solvents, organics, and other waste chemicals or other regulated materials (liquids) are containerized in carbon steel drums that meet U.S. Department of Transportation Specifications.

G-4d Security

Security at the Rocky Flats hazardous waste facilities is discussed in Section F earlier in this document.

G-5 Emergency Response and Notification

G-5a Emergency Coordinator

The Emergency Coordinator (EC) (the Shift Superintendent) is notified of incidents that involve hazardous materials or wastes. The EC is contacted by calling the Plant emergency telephone number, Extension 2911. This number will simultaneously alert the Plant Protection Central Station, Fire department, and Medical Department.

The Emergency Coordinators are thoroughly familiar with all aspects of the Contingency Plan, all site operations and activities. In addition, these individuals have the authority to commit the resources necessary to carry out the Plan. Table G-2 lists other services that may be contacted for emergency response and those organizations that could possibly be contacted by the

Emergency Coordinator in the event of an emergency that requires implementation of the Plan.

G-5b Implementation of the Plan

The decision to implement the Plan depends on whether or not an imminent or actual incident threatens human health or the environment. The purpose of this subsection is to provide guidance to the Emergency Coordinator in making this decision by providing decision-making criteria.

The Plan could be implemented in the following situations:

- o Fire and/or explosion in the following cases:
 - A fire could cause the release of toxic fumes.
 - The fire spreads and could possibly ignite materials at other locations on-site or could cause heat-induced reactions.
 - Use of water or water and a chemical fire suppressant could result in contaminated runoff.
 - An explosion has occurred or has a potential to occur.
 - An imminent danger exists that an explosion could ignite other hazardous wastes at the facility.
 - An imminent danger exists that an explosion could result in the release of toxic materials.
- o Spills or material release.
 - The spill is reportable per criteria specified under CERCLA.

Table G-2
Emergency Contacts

MEDICAL ATTENTION NEEDED

Hospital

St. Anthony North 2551 West 84th Avenue Westminster, CO	303-426-2151
---	--------------

University of Colorado Health Sciences Center 4200 East 9th Avenue Denver, CO	303-399-1211
---	--------------

Ambulance

On-Site Ambulance Service with exception of helicopter ambulance from St. Anthony	303-966-2911 (on-site x-2911)
--	----------------------------------

FIRE/EXPLOSION

Fire Department

On-Site Service	303-966-2911 on site x-2911
-----------------	--------------------------------

EXTERNAL EMERGENCY RESPONSE

Police

Jefferson County Sheriffs Department 1600 Arapahoe Golden, CO	303-277-0211
---	--------------

Colorado State Patrol	303-757-9475
-----------------------	--------------

TABLE G-2
(Continued)

SPILLS

Other Agencies

Local

Jefferson County Health Department 260 South Kipling Lakewood, CO	303-252-6301
---	--------------

Broomfield Water Utility District 225 Commerce Broomfield, CO	303-469-3301
---	--------------

Westminster Water Department 3031 West 76th Avenue Westminster, CO	303-429-1546
--	--------------

State

Colorado Department of Health Hazardous Waste Control Division 4210 East 11th Avenue Denver, CO	303-320-8333
--	--------------

Water Quality Control Division	303-320-8333
--------------------------------	--------------

Department of Disaster Emergency Services Camp George West Golden, CO	303-279-2511
---	--------------

Colorado Division of Wildlife 6060 Broadway Denver, CO	303-825-1192 x 253 (after hours 303-355-7287 or 303-421-0357)
--	--

Federal

U.S. Environmental Protection Agency, Region VII	303-844-2407
---	--------------

EPA/National Response Center Washington, DC (24 hour service)	800-424-8802
---	--------------

G-5c Emergency Procedures and Team

G-5c(1) Notification

Figure G-2 depicts the sequence in which the Emergency Coordinator and the appropriate local, state, and Federal agencies are to be contacted. The employee discovering a spill or leak is responsible for notifying the Emergency Coordinator. It is then the Emergency Coordinator's responsibility to determine the seriousness of the incident and, if he deems it necessary, to follow the action sequence shown on Figure G-2, and make the necessary internal and external contacts. The procedures to be followed for various potential emergencies are given in the subsections that follow.

G-5c(2) Identification of Hazardous Materials or Wastes

The initial response of the Emergency Coordinator will be to obtain the following information:

- o The character, exact source, amount, and areal extent of the release.
- o Whether the release could move off-site.
- o Whether spill procedures have been implemented.
- o Whether the release has been stopped and the process has been shut down.
- o Whether there are any injuries.

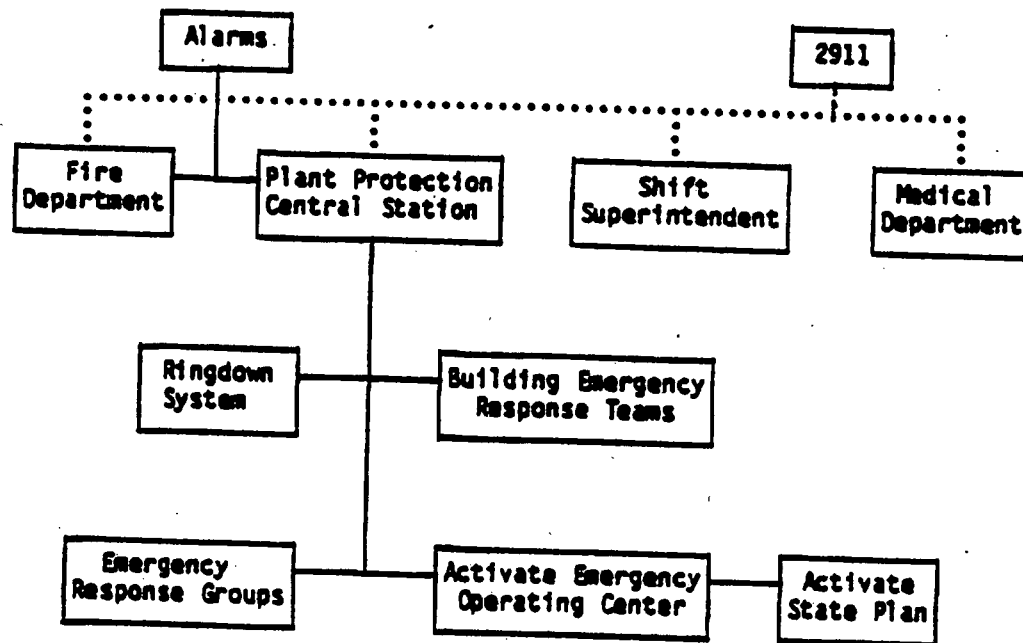


FIGURE G-2 EMERGENCY RESPONSE FLOW CHART

The initial identification method will be to utilize visual inspection of the material and the location of the release. Material stored at Rocky Flats is generally labelled as to contents; therefore, a visual inspection should be sufficient to identify the waste. If the released material cannot be identified, limited sampling, under appropriate safety protocols, and fingerprint analysis will be used.

G-5c(3) Assessment

The Emergency Coordinator will assess possible hazards, both direct and indirect, to human health or the environment. This assessment will be based on the following:

- o The character of the released material.
- o The exact source of the released material.
- o The process or storage facility from which the released material is emanating.
- o The amount of the released material.
- o A determination of the areal extent of the released material.
- o An assessment of the possible hazards to human health and the environment.

The information used in making assessments may include the following:

- o Emergency Coordinator observations.
- o Reports from Rocky Flats operational and technical support employees.
- o Waste characterization data.

o Other pertinent sources of information.

Once the area of involvement is identified, the Emergency Coordinator will acquire the appropriate facility records of the waste stored, including on-file waste analyses, manifests, and other pertinent data.

Based on this assessment, the Emergency Coordinator will evaluate possible hazards to human health or the environment that may result from the release, fire, or explosion. This evaluation will consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface-water runoff from water or chemical agents used to control fire- and heat-induced explosions). This assessment will include surrounding areas, both on-site and off-site.

Should on-site or off-site evacuation be indicated, the Emergency Coordinator will notify the appropriate personnel, including fire, police, or disaster control personnel, or the on-scene coordinator, should such be provided by the regulatory agencies. (Evacuation and notification procedures are addressed in Subsection G-5d(1) and Section G-6, respectively.)

G-5c(4) Control Procedures

Potential incidents fall under the following three general classifications:

- o Fire and/or explosions.
- o Spills or material release.
- o Power or equipment failure.

G-5c(4)(a) Fire and/or Explosion

If there is a fire or explosion in an area where hazardous materials or wastes are stored, regular emergency procedures shall be used. The Emergency Coordinator will be notified and will be responsible for advising emergency personnel as to special hazards relating to the hazardous materials or wastes. The response group to a fire will be the Rocky Flats Fire Department or the local building fire brigade.

If the fire has the potential of reaching any stored hazardous materials or wastes, they will be moved, if possible, to a secure area (especially ignitable wastes). If the hazardous wastes are not accessible because of spreading fire, they should be sprayed with the appropriate supressant . If the chances of an impending explosion are high; i.e., fire envelopes ignitable wastes, the entire area should be evacuated.

Fires occurring in the drum storage area may have to be fought with foam. Fire-fighting personnel are instructed in the use of self-contained breathing apparatus (SCBA). Supervisors in unaffected areas will stay with their personnel and remain at work until instructed to evacuate to the designated assembly areas and account for the persons under their supervision.

An "all clear" signal will be given when the fire has been

extinguished and the safety of personnel is no longer endangered. The Emergency Coordinator will determine when the emergency has passed and the "all clear" signal can be given. All equipment used in the emergency must be cleaned and fit for use prior to resumption of plant operation in the affected areas.

If an employee discovers a chemical spill or process upset resulting in a vapor release, that employee will immediately implement emergency procedures. That employee will immediately contact the Emergency Coordinator as described in Subsection G-5a. When contacted, the designated Emergency Coordinator will obtain information pertaining to the following:

- o Material spilled or released.
- o Location of the release or spillage of hazardous material and the process involved.
- o An estimate of the quantity released and the rate at which it is being released.
- o Direction in which the spill, vapor, or smoke release is heading, and the potential for moving off-site.
- o Any injuries involved.
- o Fire and/or explosion or possibility of these events.

This information will help the Emergency Coordinator assess the magnitude and potential seriousness of the spill or release. If the accident is determined to lie within the company's emergency response capabilities, the Emergency Coordinator will contact and deploy the necessary in-plant personnel to stop, contain, control, and/or clean up the spill.

If a spill has the potential for moving off-site the Emergency Coordinator will direct personnel to the appropriate surface discharge point and take all necessary steps to contain the spill on the Rocky Flats site. Based on the existing topography, all surface drainage would discharge to detention basins where cleanup actions would be concentrated. The impact of the release will be assessed by means of limited sampling and fingerprint analysis. If the spill incident requires cleanup measures, the EC will utilize on-site equipment or contact a commercial spill cleanup contractor and direct them in the implementation of the required procedures.

Any spill that is a reportable quantity under CERCLA is reported, and appropriate authorities will be contacted when the spill has been contained or controlled.

The initial response to any emergency will be to protect human health and safety, and then the environment. Identification, containment, treatment, and disposal assessment will be the secondary responses.

G-5c(4)(c) Power or Equipment Failure

A power interruption would not affect hazardous waste management facilities at the Rocky Flats Plant because the plant has emergency electrical power generation capabilities.

G-5c(4)(d) Spills and Leakage

Hazardous Waste management areas are routinely inspected for

signs of leaks, spills, deterioration, or damage. If there are indications of unit failure or containment system failure that threaten human health or the environment, the plan will be implemented immediately. The plan clearly outlines the steps necessary to evaluate the extent of damage and the measures necessary to correct the problem.

Upon observing or detecting a spill, facility employees will implement the following procedures:

- o As soon as practical, contact their supervisor and describe the location, quantity (approximate), extent, and composition of the spill.
- o The supervisor will determine whether an emergency condition exists and the Emergency Coordinator will be contacted according to operating protocol.
- o If action by the Emergency Coordinator is not required, the supervisor will typically implement the following steps:
 - Specify the extent and nature of the spill and contact the Hazardous Waste Coordinator for dispatch of appropriate cleanup equipment.
 - Dispatch an employee to the spill site to prepare a report that defines the problem and details the follow-up activities that are necessary.
- o The supervisor will contact the Emergency Coordinator if there has been a fire, explosion, or injury and/or a

spill. At this point, the Emergency Coordinator will assume control and implement the following procedures:

- Determine the nature and extent of the spill.
- Order evacuation of the affected area if the incident involved uncontrolled releases of ignitables, corrosives, or reactives.
- Dispatch a response team to the location of the spill or leak, only if they are able to safely mitigate an incident.
- Contact the Hazardous Waste Coordinator.
- Call the National Response Center if the spill is a reportable quantity.
- Once cleanup operations are in progress, prepare and complete a report that defines the problem and details the follow-up activities that are necessary.
- Subsequently, determine the cause of the spill and institute correction of the problem. Corrective actions will then be taken.
- Spilled hazardous waste from small containers will be expeditiously collected, removed, and either placed in replacement containers or recovery drums and disposed of properly.
- If appropriate, soil in the spill area will be analyzed for the constituents spilled. Soil will be removed until subsequent analysis indicates that the area is decontaminated.

To prevent the recurrence or spread of fires, explosions, or releases that are reported to the Emergency Coordinator and require implementation of the Contingency Plan, the Emergency Coordinator will:

- o Investigate the cause of the occurrence or incident.
- o Identify alternatives to prevent a recurrence.
- o Coordinate implementation of measures to reduce the risk of a recurrence.

Records of these actions will be maintained in the facility operating record.

G-5c(6) Storage and Treatment of Released Hazardous Wastes

Once cleanup procedures are completed, the Emergency Coordinator will make arrangements with the Hazardous Waste Coordinator for the treatment, storage, or disposal of the resultant hazardous wastes.

Incompatible materials, if present at the site, are segregated. Should alternate storage of materials be required, or storage of cleanup material, the Hazardous Waste Coordinator and/or the Emergency Coordinator will direct operating personnel to maintain physical segregation and proper marking of such stored material. Should an incident involve a process area, processing will not be resumed until complete cleanup/decontamination is accomplished.

G-5c(7) Post-Emergency Equipment Maintenance

After an emergency event, all emergency equipment used will be cleaned so that it is fit for reuse, or it will be replaced. Complete cleanup may also require removal of contaminated soils. Personnel decontamination will include showers and cleaning clothing and equipment. All contaminated materials, including sorbents, cloth, soil, wood, etc. that cannot be de-contaminated, must be disposed of at a permitted hazardous waste disposal facility designated by the Emergency Coordinator.

Hazardous materials must be carefully packaged in leakproof containers in accordance with DOT regulations before being transported. Before operations are resumed an inspection of all safety equipment will be conducted.

Notification that post-emergency equipment maintenance has been performed and operations will be resumed will be provided to appropriate authorities, as necessary.

G-5d Emergency Equipment

The Rocky Flats Fire Department is adequately equipped to handle an emergency at Rocky Flats. Fire extinguishers are placed on all trucks, and fire hydrants are located throughout the Plant site. Additional fire fighting equipment (foam) is available from local Fire Departments near the Plant.

In addition to fire fighting equipment, other safety equipment is presently available on-site to handle emergency situations. A

list of this equipment is shown in Table G-3. Protective clothing and equipment is located in the Hazardous Waste Coordinator's Office.

In addition to fire fighting and safety clothing/equipment, the Rocky Flats facility has materials and equipment on hand for spill containment and cleanup. Table G-4 presents a list of items that are being maintained on-site.

G-5d(1) Evacuation Plan

All emergencies require prompt and deliberate action. In the event of a major emergency that could threaten human health or the environment as described herein, it will be necessary to follow an established set of procedures. These procedures will be followed as closely as possible; however, in specific emergency situations, the Emergency Coordinator may deviate from the Plan procedures to provide more effective actions for bringing the situation under control. The Emergency Coordinator is responsible for determining which emergency situations require plant evacuation.

The general evacuation signal is a verbal command given over the facility communications system to initiate evacuation of the plant areas. In addition to the alarm, two-way radios and the internal telephone system are used to notify facility personnel of the nature of an emergency and the recommended plan of action. In the event of a power failure, the Emergency Coordinator

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Table G-3

Existing Fire Fighting Equipment and Locations

-
- o Two pumper trucks
 - o One water tanker truck
 - o One fully equipped ambulance
 - o One fully equipped rescue vehicle
 - o One "brush" truck, used primarily for grass fires
 - o Two general-purpose vehicles
 - o Scott air packs
 - o Assortment of organic vapor and acid gas respirators
 - o Tyvek suits
 - o Gloves
 - o Boots
-

Table G-4

Materials and Equipment for Spill Containment and Cleanup

Material(s)/Equipment	Substances Contained, Absorbed/Cleaned Up
Standard industrial absorbents (Sorb-All, vermiculite, etc.).	For small spills of oil, solvents, and organic materials. Not used for acids or caustics unless first neutralized.
55-gallon and 85-gallon recovery drums; steel, poly-lined steel	Most organics (steel); acids, caustics, contaminated absorbent materials (poly-lined/steel).
Portland Cement	Cement is unreactive with most chemicals (except concentrated acids).
Backhoe	For removal of contaminated soil/slugs, sediment, etc.

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communicates evacuation instructions to area supervisors by telephone. All employees are familiar with the evacuation command and operation of the radios and internal telephone systems.

In the event evacuation of the facility is called for by the Emergency Coordinator, all employees, contractors, and visitors will immediately leave their work areas and proceed to the designated assembly areas. Rocky Flats personnel will be accounted for by their immediate supervisors. A list of visiting personnel will be prepared from the site sign-in records. Personnel evacuation will proceed as follows:

- o If downwind of the incident, evacuate perpendicularly to the wind direction over the most accessible route.
- o If upwind of the incident, evacuate in the upwind direction.

G-5e Coordination Agreements

Rocky Flats has discussed the nature of their facility operations and the type of emergency situations that might occur with the neighboring municipalities. Those that may be called upon to provide emergency services will be provided with a copy of the Contingency Plan.

G-6 Plan Implementation

G-6a Organizational Structure

The first response to a spill incident is to occur on an opera-

tional personnel level. If operational personnel response is not sufficient to control the emergency situation, the Emergency Coordinator will determine the appropriate action.

G-6b Plan Review and Update

The Plan will be reviewed and amended, if necessary, whenever the following occurs:

- o The facility permit is revised.
 - o The Plan fails in an emergency.
 - o The hazardous waste management units change in design, construction, operation, maintenance, or other circumstances in a way that materially increases the potential for fires, explosions, or releases of hazardous wastes or hazardous waste constituents, or changes in the response necessary in any emergency.
- in any emergency.

The Plant Manager and the DOE Area Manager of Rocky Flats are the authorized persons responsible for changing or amending the Contingency Plan. Changes will be made by the direct replacement of outdated pages with new pages containing the additional or modified information. Old pages will be removed and discarded. Replacement pages will be issued to the agencies/organizations to which copies of the Rocky Flats Contingency Plan have been distributed to ensure that all copies of the plan have been updated.

G-6c Personnel Training

Rocky Flats has an established personnel training program under the direction of the Hazardous Waste Coordinator with assistance from the off-site training center and training department. All employees associated with hazardous waste management are trained in emergency response procedures. Operations supervisors are trained in emergency response procedures applicable to hazardous wastes in their work area.

G-6d Recordkeeping

Records on hazardous waste activities and personnel training are maintained until closure of the facility.

As required by CHWR 264.56(j), any emergency event (e.g., fire, explosion, etc.) that requires implementing the Plan will be reported in writing within 15 days to the Department.

G-7 Emergency Services Documentation

Letters documenting agreements and/or understandings with potential emergency service contractors are found on file at RF.

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H - PERSONNEL TRAINING

SECTION H

PERSONNEL TRAINING

The information contained in this section outlines the personnel training program for Rocky Flats' hazardous waste management facility in accordance with the requirements of CHWR 100.41 (a)(12) and 40CFR 270.14(b)(12).

H-1 GENERAL INFORMATION

The majority of the personnel at Rocky Flats do not have contact with hazardous wastes. Certain personnel have only indirect contact with hazardous wastes. This group includes: operating supervisors, office personnel, and security personnel who enforce the security measures discussed in Section F and who might be involved in an emergency situation. These personnel do not have any responsibilities for the handling or ultimate disposition of hazardous wastes. Employees directly involved with hazardous waste pickup, transfer, handling, etc., are the generators and drivers. These employees will be trained through a Rocky Flats training program designed to meet the regulations of CHWR CFR 264.16.

H-1a JOB TITLES AND DUTIES

Each manager of specific processes will assure that his personnel fully understand all duties and responsibilities. In addition, each employee is responsible for learning general hazardous waste requirements at the Rocky Flats facility.

Table H-1 summarizes the duties and responsibilities of personnel who are involved with the Rocky Flats hazardous waste management.

H-1b TRAINING CONTENT AND FREQUENCY

The Hazardous Waste Coordinator presents a RCRA Training Program to all employees within Waste Operations and to other designated employees that have a significant role in waste management. Managers are notified when employees that handle or manage hazardous waste are due to receive classroom training to supplement their on-the-job training, thus complying with the RCRA regulations. The classroom instruction is presented in one 2.5 hour session that overviews hazardous waste management, introducing the vocabulary, handling/disposal procedures, and personnel protection safety equipment. A RCRA training film and lecture regarding waste specific to Rocky Flats are also presented during the classroom program. Table H-2 provides an outline of the RCRA classroom training program.

TABLE H-1

**Responsibilities and Duties of Employees Involved
with the Rocky Flats Hazardous Waste Program**

Waste Operations Manager

The Waste Operations Manager is responsible for final approval of all hazardous waste shipments. He delegates his authority to the Hazardous Waste Coordinator to ensure that all wastes are analyzed, handled, and treated in a safe and efficient manner. He also ensures that all outgoing shipments are sampled and sent to the designated disposal facility.

Hazardous Waste Coordinator

The Hazardous Waste Coordinator is responsible for proper execution of hazardous waste activities at the Rocky Flats facility. He coordinates with the Environmental Analysis and Control Section to handle all wastes in an efficient and safe manner. He is responsible for ensuring that the waste storage areas are kept clean and handles all records that track the wastes at Rocky Flats. He ensures that all out-going shipments are sampled.

TABLE H-1 (continued)

Environmental Analysis and Control Section (EA&C)

The Environmental Analysis and Control Section is responsible for screening all waste processing request forms. The Environmental Analysis personnel notify the generators if any further tests must be completed on the waste and the proper disposal location. The EA&C personnel coordinate with the Hazardous Waste Coordinator to determine the handling procedures for each waste item. In case of an emergency incident, he is responsible for maintaining environmental standards.

Generators

Each employee who is a generator of hazardous waste shall be responsible for the proper handling and containment of waste materials that his process handles. In addition, all handlers shall be responsible for:

- o Reporting any release of hazardous waste that may endanger the health and safety of facility personnel.
- o Notifying the Hazardous Waste Coordinator for pickup of waste materials bulked or solidified, in accordance with the established waste disposal procedure.

TABLE H-1 (continued)

Drivers

Rocky Flat's drivers must be familiar with the requirements in the On-Site Transportation of Radioactive and Other Hazardous Materials Manual. Rocky Flats' drivers only transport non-manifested hazardous wastes on the Plant site.

Emergency Coordinator

The Emergency Coordinator (EC) is responsible for the effective performance of the emergency organization and coordination of all emergency activities. The EC or his alternate(s) is available 24 hours per day, seven days per week.

Rocky Flats Fire Department

The Rocky Flats Fire Department is available 24 hours per day, seven days per week. All assigned personnel on the team are trained to cope with:

- o Hazardous waste spills and releases.
- o Fire and/or explosions.
- o Personnel injuries.

TABLE H-1 (continued)

Industrial Hygiene Personnel

The Industrial Hygiene personnel, as part of the Rocky Flats Safety Team, are responsible for the environmental and occupational health of facility personnel.

Traffic Manager

The Traffic Manager is responsible for certifying that the off-site shipments of hazardous wastes meet DOT and RCRA requirements.

TABLE H-2

Training Program - Hazardous Waste

- o Introduction
 - RCRA hazardous waste storage facility requirements
 - RCRA overview videotape
 - Rocky Flats contingency plan and emergency response procedures
- o Waste Handling Procedures
 - Generator's responsibilities; Rocky Flats waste chemical disposal procedures
- o Classification and Labelling of Hazardous Wastes
 - Hazardous waste identification
 - Review of wastes handled
 - DOT regulations
- o Flammable Liquid Wastes
- o Corrosive Wastes
 - Common types of corrosives
 - Harmful effects of specific corrosives

TABLE H-2 (continued)

- o Toxic Wastes
 - Types of toxic reactions
 - Routes of entry
 - Common toxic wastes
 - Precautions for handling toxic wastes
- o Reactive Wastes
 - Major groups of reactive wastes
 - Common reactive wastes
- o Emergency Response Procedures

Employees are also given on-the-job training to further increase their knowledge of hazardous waste management practices. This training includes hands-on utilization of operating equipment, with particular emphasis on proper operation of personnel safety equipment. All facility personnel take part in periodic (annual) reviews of this initial training program.

The RCRA classroom training program was implemented during February of 1985. However, prior to this date the Hazardous Waste Coordinator had been providing a DOT Hazardous Materials training class for approximately five years. This course contained a significant amount of information similar to the new RCRA Training Program (see Appendix H-1). Therefore, the RCRA Training Program and the DOT Hazardous Materials Class are separately taught annually and bi-annually, respectively.

H-1c HAZARDOUS WASTE COORDINATOR

The Hazardous Waste Coordinator, has knowledge in all aspects of hazardous waste management. He is knowledgeable in environmental regulations and is a DOE-certified instructor of Hazardous Material Safety.

H-1d RELEVANCE OF TRAINING

The primary source of relevant training for specific positions is received through on-the-job training. All employees' shift supervisor or foreman will periodically evaluate the employees understanding and ability to perform the assigned tasks. If an employee is found to be deficient, he is required to repeat the training course work and/or work under direct supervision until found to be knowledgeable.

In addition, the Rocky Flats hazardous waste management personnel are required to attend classes and training programs that will typically include the following topics:

- o RCRA Training Program
- o DOT Hazardous Materials Class
- o Rocky Flats Contingency Plan and Emergency Response Procedures
- o Hazardous Waste Monitoring
- o Emergency Notification Procedures
- o Basic First Aid
- o CPR
- o Location of emergency eye wash and safety showers (building specific)

H-2 TRAINING FOR EMERGENCY RESPONSE

All employees associated with hazardous waste management are trained in emergency response procedures, as can be seen in the training requirements outlined (see Table H-3). Operations supervision and laboratory personnel are trained in emergency response procedures applicable to their particular departments, including prompt notification of the EC. The primary emergency response procedure addresses spill response, although procedures for fires and other incidents are discussed. The emergency response training program is designed to ensure that personnel not only handle hazardous wastes in a safe manner, but also properly respond to emergency situations. The program trains hazardous waste management personnel to maintain compliance under both normal operating conditions and emergency conditions.

Training elements addressing non-routine and emergency situations (unscheduled shutdowns and startups related to storms, power outages, fires, explosions, and spills) include the following:

- o Familiarity with the Contingency Plan (Section G).
- o Emergency communication procedures.
- o Response to fires or explosions.
- o Shutdown of operations and power failure procedures.
- o Procedures for evacuation of nearby areas.

In addition to the hazardous waste management personnel, the Rocky Flats Fire Department has been designated for response to all fires and other general emergencies. This is a fully trained fire department which is prepared to handle any emergency on the plant site. The classroom training is required for introductory training.

TABLE H-3

Personnel Training Requirements

Position	RCRA Hazardous Waste Facility Require- ments	Emergency Response and Release Prevention	Inspec- tions, Record- keeping, and Reporting	Fire Extin- guisher Use, Fire Safety and Rescue, Use of Protective Equipment and Clothing	Basic First Aid
Operations Manager	X	X	X		
Environmental Analysis		X	X	X	
Hazardous Waste Coordinator	X	X	X	X	
Industrial Hygiene Personnel	X	X	X	X	
Emergency Coordinators	X	X		X	
Generators		X	X		
Drivers		X			
Security Personnel		X		X	X
Fire Department	X	X		X	X

H-3 IMPLEMENTATION OF TRAINING PROGRAM

The Training Program is assembled and taught annually by the Hazardous Waste Coordinator. All personnel handling hazardous wastes continue to be trained at the time of this submittal.

The training information and expertise is provided and exchanged with close coordination from the following departments:

- o Rocky Flats Fire Department
- o Industrial Hygiene
- o Environmental Analysis and Control Section.

The course contains and is taught following the outline presented in Table H-2.

New employees hired to work at Rocky Flats or reassigned employees will not work unsupervised with hazardous wastes prior to completion of the appropriate training program.

- o New employees must be fully trained within six months after their service start date with Rocky Flats.
- o Employees recently reassigned will be fully trained as to their new responsibilities within six months after their assignment date.

- o All employees will receive training material, attend appropriate classes and sign Acknowledgement of Training Form shown in Figure H-1.

The hazardous waste management personnel are required to take a Hazardous Waste test (see Appendix H-2) upon completion of the classroom material. A grade of >80% is considered successful completion of the program. In the event an unsuccessful grade is obtained, the employee is required to repeat the training until a successful grade is obtained.

In addition to the RCRA Training Program, Liquid Waste Processing maintains training checklists and examinations for workers involved with liquid waste processing (see Appendix H-3).

All records documenting the job title for each position, job descriptions, names of employees, and successfully completed training programs (both introductory and review) are kept on-site. A typical form to be used to document initial completion and the annual update and review sessions of the training program for each employee is shown in Figure H-2. These records will be kept until closure of the facility for current employees, and for three years from the date of the individual employee's termination for former employees.

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FIGURE H-1

Example of Rockwell Sign-Off Sheet

ROCKWELL INTERNATIONAL
ROCKY FLATS SITE

<u>NAME</u>	<u>TITLE</u>	<u>SIGNATURE</u>	<u>DATE</u>
C. E. Wickland	Manager, Waste Operations	_____	
J. A. Hayden	Hazardous Waste Coordinator	_____	
R. D. Gaskins	Manager, Liquid Waste Operations	_____	
A. C. Picklin	Manager, Solid Waste Operations	_____	
J. L. DiRocchi	Manager, Liquid Waste Processing, Bldg. 374	_____	
R. E. Brady	Manager, Waste Water Projects	_____	
G. T. Hewitt	Manager, Liquid Waste Processing, Bldg. 774	_____	

LINE NO.	LAST NAME First, Middle, Initial	EMPLOYEE NUMBER See Page 1	DEPARTMENT	TOTAL HRS ATT	PERIOD FOR WHICH PAY IS MADE MONTH ACTUAL HRS FOR TIME PRESENTED MONTHS
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					

STUDENTS' NAMES:

[illegible]

FIGURE H-2
Training Attendance
Roster

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SECTION I

CLOSURE PLAN

SECTION I

CLOSURE PLAN

This section is submitted in accordance with the requirements of CHWR 264 Subpart G and 40 CFR 270.14(b)(13) and (15).

I-1 Introduction

This Closure Plan is designed to meet all of the requirements of CHWR 264 and 40 CFR 264.112 through 115, 264.142 and 143, 264.147 and 264.149.

I-1a Background

Rocky Flats operates a hazardous waste storage and treatment facilities for on-site hazardous waste generators. All hazardous waste generated on-site are recycled, treated, or disposed of off-site.

The Rocky Flats Plant covers almost 11 square miles of Jefferson County, Colorado. The facility is centered at 105° 11' 30" west longitude, 39° 53' 30" north latitude. As shown in Figure B-1, this location is 16 miles northwest of Denver and 9 to 12 miles from the communities of Boulder, Golden and Arvada. It is bounded on the north by State Highway 128, on the west by State Highway 93, on the south by State Highway 72, and on the east by Jefferson County Highway 17. Figure B-2 is a map of the immediate vicinity of the Rocky Flats Plant.

Situated at an elevation of about 6,000 feet, the Plant is on the

eastern edge of a geological bench known locally as Rocky Flats. This rocky bench, which is about 5 miles wide in an east-west direction, flanks the eastern edge of the abruptly rising foothills of the Rocky Mountains. The Continental Divide is approximately 26 miles west of the Plant.

The Rocky Flats Plant is a Government-owned facility with the primary mission of producing plutonium components for nuclear weapons. Production activities involve the fabrication of plutonium, uranium, beryllium, and stainless steel parts. Other activities include chemical processing to recover plutonium from scrap material, R&D work in metallurgy, machining, assembly, nondestructive testing, coatings, remote engineering, chemistry, and physics. Parts made at the Plant are shipped elsewhere for final assembly.

Research and engineering programs that supporting these activities involve chemistry, physics, materials technology, ecology, nuclear safety, and mechanical engineering.

Approximately 102 structures on the Plant site contain about 214,000 square meters (2.29 million square feet) of floor space. Of this space, major manufacturing, chemical processing, plutonium recovery, and waste treatment facilities occupy about 170,000 square meters (1.83 million square feet).

Major laboratory and research buildings occupy about 13,850

square meters (149,000 square feet). The remaining floor space is divided among administrative, utility, security, warehouse storage, and construction contractor facilities.

I-1b Regulatory Requirements

In accordance with regulations promulgated under the Resource Conservation and Recovery Act (RCRA) and Colorado Hazardous Waste Management Regulations, Rocky Flats has developed a detailed closure plan for the hazardous waste facilities at their site.

The Closure Plan for a hazardous waste management facilities is required by RCRA and the Colorado Hazardous Waste Management Regulations. The Plan must include the following:

- o A description of how and when the facility will be partially and/or finally closed. (Partial closure consists of those parts of the facility that are to be closed because their useful life has been expended.)
- o Estimate of the maximum inventory of wastes in storage at any time during the life of the facility (for development of the closure cost estimate).
- o Description of steps needed to decontaminate the facility during closure.
- o Estimate of the expected year of closure and a closure schedule, including itemization of activities that will allow tracking of closure progress.

- o Notification and submission of the Closure Plan to the Environmental Protection Agency (EPA) Regional Administrator and the Colorado Department of Health (CDH) at least 180 days prior to initiation of closure.
- o Decontamination steps at the end of closure for all equipment used during closure.
- o Proposed procedures for certification of closure activities by the facility and an independent registered professional engineer.

During the lifetime of the facility, Rocky Flats is required to amend the Plan whenever changes in operating procedures or facility design affect the Plan, or whenever there is a change in the expected year of closure.

The Plan must address the applicable requirements for the specific types of waste storage facilities at the location. The specific criteria include provisions for the following:

- o Removing of all hazardous wastes and hazardous waste residues from confinement structures.
- o Minimizing the potential for post-closure migration of contaminants from the facility via groundwater, surface water, and air.

I-1c Description of Treatment and Storage Facility Operations

The hazardous waste storage facilities at Rocky Flats currently consist of a hazardous waste storage containers, a gas storage

shed, silver recovery systems, fluidized bed incinerator, and miscellaneous bench scale chemical detoxification facilities. Containerized wastes are delivered to the Rocky Flats storage area site via Rocky Flats trucks and off-loaded at the container storage area. When sufficient amounts of compatible wastes have accumulated in the storage area, the wastes are sent off-site for recycling or disposal.

I-2 Closure Concept and Plan

I-2a Basis of Closure

The Closure Plan for the Rocky Flats hazardous waste treatment and storage facility is based on the following key steps:

- o Removal of all wastes from the containerized waste storage area cargo containers for recycling or off-site disposal at appropriate facilities.
- o Decontamination of plant equipment and facilities used for storage and handling of hazardous wastes.
- o Inspection of storage facilities for any hazardous material residues.
- o Certification of completion of closure by Rocky Flats and an independent registered professional engineer.

Upon site closure, all wastes will be processed and then shipped to approved off-site facilities for recycling or disposal.

I-2b Partial Closure Activities

Partial closure consists of those parts of the facility that are

to be closed because their useful life has been expended. If any of the facility parts (i.e., the containerized waste storage area cargo containers) were to be closed, the closure procedures would be the same as specified elsewhere in this Plan.

I-2c Maximum Waste Inventory

The maximum waste inventory at the Rocky Flats facility is broken down as follows:

<u>Inventory Location</u>	<u>Maximum Capacity</u>
Containerized waste storage building	616,000 gallons (112 55-gallon drums)

I-2d Inventory Removal and Disposal

The hazardous waste inventory will be located in the following area:

- o Containerized waste storage area cargo containers.

As now planned, the hazardous waste treatment and storage areas will continue operating as long as Rocky Flats is operating, and currently there are no plans to close the Plant in the foreseeable future.

A Closure Plan for all existing facilities and equipment (described in detail in Section D) is included in the following text. All waste materials would be disposed of in the usual manner. The facilities and equipment would be decontaminated and used for nonhazardous activities or disposed of off-site.

I-2f(5) Partial Closure

Refer to I-2e.

I-2f(6) Final Closure Facilities

Thirty days prior to beginning facility closure all storage area inventories would be removed in the same manner as during normal operations. The inventories would be reclaimed and/or disposed of in accordance with local, State, and Federal rules and regulations. The following general procedures would prevail:

- o All containers would have been removed from the storage area prior to closure of the area. No containers of hazardous wastes would be within the storage area when closure of the area begins.
- o Facilities would be decontaminated by steam cleaning.
 - Personnel wearing properly prescribed safety apparel (OSHA) would clean the storage structure walls, ceilings, floors, and pan. Working from the top to the bottom, all surface areas would be thoroughly cleaned and decontaminated.
 - All debris, waste residues, and disposal cleaning utensils would be managed as hazardous wastes and would be disposed of at RCRA, a permitted off-site facility.
 - After all surface areas have been cleaned and decontaminated, Rocky Flats would perform "wipe tests" on the surface areas of the structures.

These wipes would be analyzed by the on-site laboratory for hazardous constituents based on the types of wastes that were stored within the area. Sampling and testing would be conducted in accordance with ASTM/U.S. EPA methods and procedures.

- If an area is found to be contaminated, the surface areas would be cleaned and retested.
- After decontamination is complete, the area would be inspected by an independent professional engineer and closure certification obtained.
- Closure certifications would be submitted as described in Subsection I-2k.

The closure procedures described within this section would be completed within 30 days by Rocky Flats personnel using equipment and supplies located on the site.

I-2f(7) Partial Closure

Rocky Flats does not anticipate that any portion of the hazardous waste storage area will involve partial closure.

I-2g Decontamination

All equipment used during closure activities would be decontaminated in a safe and professional manner by trained, qualified hazardous materials technicians using procedures and safety gear in accordance with OSHA requirements. All contaminated surfaces of vehicles and equipment would be scrubbed with solutions designed to remove contaminants. All surfaces would then be rinsed with water. This process would be repeated as often as necessary to ensure complete surface decontamination.

All decontamination residues and disposal supplies would be treated as hazardous and disposed of in accordance with all local, State, and Federal regulations.

All personnel decontamination activities would be administered by the Hazardous Waste Coordinator. All personnel would be instructed as to the required safety equipment and decontamination procedures to be used during closure.

Day-to-day hazardous waste handling operations and closure activities may result in the spillage of hazardous materials. These occurrences will be handled by immediately excavating the contaminated aggregate or soil and sending it off-site for disposal at a RCRA permitted facility. At the completion of site closure activities, a series of surface soil samples would be taken in order to check for contamination of access roads, parking areas, waste handling areas, and sediment ponds. Contaminated soils would be excavated and transported to a RCRA permitted facility for disposal.

I-2h Closure Certification and Inspection

A certification inspection, required by 40 CFR 264.115, would be performed by an independent registered professional engineer and would be submitted to the EPA Regional Administrator and Colorado Department of Health, indicating that the facility had been closed in accordance with the Closure Plan.

I-2i Institutional Requirements

Sections 40 CFR 264.119 and 120 of RCRA relate to notification of the local land authority and notice in deed to the property. These regulations apply only to disposal facilities and need not be addressed for storage and treatment facilities.

I-3 Closure Cost Estimate

In accordance with 40 CFR 264.140 (c) and CHWR 266.10 (c) Rocky Flats is exempt from closure cost estimate requirements.

I-4 Liability Insurance

Rocky Flats is owned and operated by the U.S. Government. Insurance certification is not needed because the U.S. Government is self-insured by definition and legislative authority/statute.

I-5 Financial Assurance Mechanism

See Section I-4.

I-6 Plan Review and Update

Copies of the Rocky Flats Closure Plan are kept on-site in the main office. The Colorado Department of Health, Denver, and EPA Region VIII, will also be provided with copies.

The Plant Manager of Rocky Flats is the authorized person responsible for updating the facility Closure Plan. The Plan will be reviewed and amended annually. Other changes in the Plan will also be made at that time if required.

Changes will be made by the direct replacement of outdated pages

COD078343407

Date: November 1, 1985
Revision No.: 0
I

with new pages containing the additional or modified information. Old pages will be removed and discarded. Replacement pages will be issued to the agencies/organizations to which copies of the Rocky Flats Closure Plan have been distributed to ensure that all copies of the Plan have been updated.

COD078343407

Date: November 1, 1985
Revision No.: 0
J

SECTION J

(RESERVED)

COD078343407

Date: November 1, 1985

Revision No.: 0

K

SECTION K
CERTIFICATION

COD078343407

Date: November 1, 1985
Revision No.: 0
K

SECTION K

CERTIFICATION*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Date: November 1, 1985

Signature: 

J. L. Bellows
Acting Area Manager
UNITED STATES DEPARTMENT
OF ENERGY

Signature: 

J. M. Dorr
Vice President and
General Manager
ROCKWELL INTERNATIONAL
CORPORATION

Signature: 

L. T. Hatch, P.E.
Project Director
WESTON DESIGNERS
AND CONSULTANTS

* See Section A, Form 1, Attachment 2

Volume 2

Resource Conservation and Recovery Act

PART B PERMIT APPLICATION
CODO78343407

Submitted by

Department of Energy's Rocky Flats Plant
Golden, Colorado

to

Colorado Department of Health
Waste Management Division
Denver, Colorado

1 November 1985

Prepared by

Roy F. Weston, Inc.
938 Quail Street
Denver, Colorado 80215
In Association with
Chen and Associates, Inc.

COD078343407

Date: November 1, 1985
Revision No.: 0

VOLUME 2

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APPENDIX D-1	Drum Disposal Procedures
APPENDIX F-1	Typical Warning Sign
APPENDIX H-1	DOT Hazardous Materials Class Material
APPENDIX H-2	RCRA Training Program Sample Test
APPENDIX H-3	Liquid Waste Training Material

CODO78343407

Date: November 1, 1985
Revision No: 0
APPENDIX C-1

APPENDIX C-1

EXAMPLES OF COMPLETED WASTE
PROFILE SHEETS

Please print or type. (Form designed for use on size (12-pitch) typewriter.)

Form approved, OMB No. 2000-0404. Expires 7-31-98

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. COD078343407		Manifest Document No. 35067		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.							
3. Generator's Name and Mailing Address Rockwell International, Rocky Flats Plant PO Box 464, Golden, CO 80401						A. State Manifest Document Number									
4. Generator's Phone (303) 497-2377						B. State Generator's ID									
5. Transporter 1 Company Name Oil & Solvent Process Company			6. US EPA ID Number COD980591184			C. State Transporter's ID									
7. Transporter 2 Company Name			8. US EPA ID Number			D. Transporter's Phone 303-289-4827									
9. Designated Facility Name and Site Address Oil & Solvent Process Company 9131 E 96th Ave. Henderson, CO 80640			10. US EPA ID Number COD980591184			E. State Transporter's ID									
						F. Transporter's Phone									
						G. State Facility's ID									
						H. Facility's Phone 303-289-4827									
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)						12. Containers		13. Total		14. Unit		15. Waste No.			
						No. Type		Quantity		Wt/Vol					
a. RQ Hazardous Waste, Liquid, n.o.s., (ORM-E) (NA9189) (26-526) (U107)						2 DM		105		G					
b. X Waste Trichloroethylene, (ORM-A) (UN1710) (26-535) (U228)						1 DM		500m		G					
c. a. 1,1-Diethyl Phthalate - 100% PH. 7															
d. b. Trichloroethylene, ~100%; (pH = 6.4)															
1. Additional Descriptions for Materials Listed Above						K. Handling Codes for Wastes Listed Above									
15. Special Handling Instructions and Additional Information Bungs and rings tight; drums not leaking. a. Gloves and goggles. b. Gloves, goggles and respirator.															
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.															
Printed/Typed Name Delores M. Krier, Traffic Manager										Signature <i>Delores M. Krier</i>				Date Month Day Year 10/10/84	
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name Tom Uigby										Signature <i>Tom Uigby</i>				Date Month Day Year 10/16/84	
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name										Signature				Date Month Day Year	
19. Discrepancy Indication Space None															

2. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name Janice Ballard		Signature Janice Ballard		Date Month Day Year 10/10/84	
--------------------------------------	--	-----------------------------	--	------------------------------------	--

UNIFORM HAZARDOUS
WASTE MANIFEST1. Generator's US EPA ID No.
COD078343407Manifest
Document No.
750462. Page 1
of 1
Information in the shaded areas
is not required by Federal law.

3. Generator's Name and Mailing Address

Rockwell International, Rocky Flats Plant
PO Box 464, Golden, CO 80401

4. Generator's Phone (303) 497-2377

5. Transporter 1 Company Name

Oil & Solvent Process Company

6. US EPA ID Number

COD980591184

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address

Oil & Solvent Process Company
9131 E. 96th Ave.
Henderson, CO 80640

10. US EPA ID Number

COD980591184

A. State Manifest Document Number

B. State Generator's ID

C. State Transporter's ID

D. Transporter's Phone 303-289-4827

E. State Transporter's ID

F. Transporter's Phone

G. State Facility's ID

H. Facility's Phone

303-289-4827

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)

12. Containers

13. Total

Quantity

14. Unit

Wt/Vol

1. Waste No.

a.

X Waste Combustible Liquid, n.o.s., (Combustible Liquid)
(NA1993)

No.

10

DM

500

G

b.

X Waste Paint Related Material,
Flammable Liquid, (NA1263)

No.

11

DM

500

G

c.

1 Non-Hazardous Material, 50%

a. 2 Petroleum distillate, 50%; pH = 7

d.

b. 1 Fluorocarbons - 7%; Aromatics - 15%;

2 Aliphatics - 12%; Ketones - 65%;

3 Alcohols - 8%; pH = 6.8 - 9

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

Bungs and rings tight; drums not leaking; gloves and goggles.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name

Delores M. Krieg, Traffic Manager

Signature

Delores M. Krieg

Date

Month Day Year
10 10 84

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Don W. W. W.

Signature

Don W. W. W.

Month Day Year
10 10 84

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Don W. W. W.

Signature

Don W. W. W.

Month Day Year
10 10 84

19. Discrepancy Indication Space

None

1. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 18.

Printed/Typed Name

Janice Ballard

Signature

Janice Ballard

Date

Month Day Year
10 10 84

Instructions.
Print clearly. Press Hard.

OIL & SOLVENT PROCESSING COMPANY

B/L# 12423

1 Manifest Number 428-010

GENERATOR

(GENERATOR MUST COMPLETE)

2 Name Rockwell International

3 Designated TSD Facility (Authorized to operate under an approved state program or federal program)
Name Oil and Solvent Process Company

4 Alternate TSD Facility
Name Oil and Solvent Process Company

EPA # C O D 9 8 0 5 9 1 1 8 4

EPA # C O D 9 8 0 5 9 1 1 8 4

EPA # C O D 9 8 0 5 9 1 1 8 4

Address PO Box 464 Phone (303) 497-2377

Address 9131 E. 96th Avenue Phone (303) 289-4827

Address 1704 W. 1st Street Phone (213) 334-5117

City, State, Zip Colorado, CO 80401

City, State, Zip Henderson Colorado 80640

City, State, Zip Azusa, California 91702

U.S. DOT PROPER SHIPPING NAME	HAZARD CLASS	UN	WEIGHT OR VOLUME	UNITS	NUMBER OF CONTAINERS
WASTE FLAMMABLE LIQUID, N.O.S.	FLAMMABLE	UN1993	225	gallons	
WASTE	LIQUID				
					TYPE: <input type="checkbox"/> DRUMS <input type="checkbox"/> BAGS <input type="checkbox"/> CARTONS
					<input type="checkbox"/> TANK TRUCK <input type="checkbox"/> DUMP TRUCK
					<input type="checkbox"/> OTHER

Waste Category 00 7 Ext. Haz. Waste Reg. No. N/A

9 LIST COMPONENTS:

- A. Aliphatics
- B. Ketones
- C. Alcohols
- D. Aromatics

CONCENTRATION RANGE
UPPER LOWER
90 80
8 3
4 2
10

UNITS

LIST COMPONENTS:

CONCENTRATION RANGE
UPPER LOWER
90 80
8 3
4 2
10

UNITS

- ☐ % ☐ ppm
- ☐ % ☐ ppm
- ☐ % ☐ ppm

10 WASTE PROPERTIES: pH 7 ☐ Toxic ☒ Flammable ☐ Corrosive/Irritant ☐ Reactive ☐ Sensitizer ☐ Carcinogen/Mutagen

11 PHYSICAL STATE: ☐ Solid ☒ Liquid ☐ Sludge ☐ Slurry ☐ Gas ☐ Other

12 SPECIAL HANDLING INSTRUCTIONS: ☒ Gloves ☒ Goggles ☐ Respirator ☒ Other: Drums not leaking - Pumps right

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL
RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8662

Signature of Authorized Agent and Title

Delores H. Krieg, Traffic Manager

Date Shipped 4-2-84

TRANSPORTER

(HAULER MUST COMPLETE)

4 TRANSPORTER NAME Oil and Solvent Process Company

15 PICK-UP DATE 4-2-84

ADDRESS 9131 E. 96th Avenue PHONE (303) 289-4827

CITY, STATE, ZIP Henderson, Colorado 80640

EPA NO. C O D 9 8 0 5 9 1 1 8 4 Time 1:45 PM

Signature of Authorized Agent and Title

Date

TSD FACILITY

(FACILITY-OPERATOR MUST COMPLETE)

17 Name Oil and Solvent Process Company

18 QUANTITY (If Measured)

EPA NO. C O D 9 8 0 5 9 1 1 8 4 19 STATE FEE (If Any)

PHONE NO. (303) 289-4827

20 INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT:

21 HANDLING OR DISPOSAL METHOD:

- ☐ Recycling for Customer
- ☒ Recycling
- ☐ Disposal

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

22 Designated TSD Facility Name

EPA NO.

23

Signature of Authorized Agent and Title

Date Accepted

GENERATOR - RETURN COPY

See reverse for instructions.
Please type or print clearly. Press Hard.

WASTE MANIFEST

1 Manifest Number 428-6117

Sent 4-19-84

GENERATOR

(GENERATOR MUST COMPLETE)

2 Name Rockwell International
EPA # C10101718131413141017
Address PO Box 464 Phone 303-497-2377
City, State, Zip Golden, CO 80401

3 Designated TSD Facility (Authorized to operate under an approved state program or federal program.)
Name Oil and Solvent Process Company
EPA # C10101918101519111114
Address 9131 E. 96th Avenue Phone (303) 289-4827
City, State, Zip Henderson Colorado 80640

4 Alternate TSD Facility
Name Oil and Solvent Process Company
EPA # C1A101018131012191013
Address 1704 W. 1st Street Phone (213) 334-5117
City, State, Zip Azusa, California 91702

5 U.S. DOT PROPER SHIPPING NAME	U.S. DOT HAZARD CLASS	UN	WEIGHT OR VOLUME	UNITS	NUMBER OF CONTAINERS	TYPE
WASTE <u>FLAMMABLE LIQUID, N.O.S.</u>	<u>FLAMMABLE</u>	<u>UN1993</u>	<u>225</u>	<u>gallons</u>	<u>7</u>	<input type="checkbox"/> DRUMS <input type="checkbox"/> BAGS <input type="checkbox"/> CARTONS
WASTE <u>FLAMMABLE LIQUID</u>	<u>D001</u>	<u>LIQUID</u>	<u>EST</u>			<input type="checkbox"/> TANK TRUCK <input type="checkbox"/> DUMP TRUCK
						<input type="checkbox"/> OTHER

6 Waste Category 66 7 Ext. Haz. Waste Permit No. N/A 8 Generating Process Equipment Cleaning

9 LIST COMPONENTS:	CONCENTRATION RANGE UPPER	LOWER	UNITS	LIST COMPONENTS:	CONCENTRATION RANGE UPPER	LOWER	UNITS
A. <u>Aliphatics</u>	<u>90</u>	<u>80</u>	<input checked="" type="checkbox"/> % <input type="checkbox"/> ppm.	E. _____			<input type="checkbox"/> % <input type="checkbox"/> ppm.
B. <u>Ketones</u>	<u>8</u>	<u>3</u>	<input checked="" type="checkbox"/> % <input type="checkbox"/> ppm.	F. _____			<input type="checkbox"/> % <input type="checkbox"/> ppm.
C. <u>Alcohols</u>	<u>4</u>	<u>2</u>	<input checked="" type="checkbox"/> % <input type="checkbox"/> ppm.	G. _____			<input type="checkbox"/> % <input type="checkbox"/> ppm.
D. <u>Aromatics</u>	<u>10</u>	<u>5</u>	<input checked="" type="checkbox"/> % <input type="checkbox"/> ppm.	Non-Hazardous Material <u>15-35</u> %			

10 WASTE PROPERTIES: pH 7 ☐ Toxic ☒ Flammable ☐ Corrosive/Irritant ☐ Reactive ☐ Sensitizer ☐ Carcinogen/Mutagen

11 PHYSICAL STATE: ☐ Solid ☒ Liquid ☐ Sludge ☐ Slurry ☐ Gas ☐ Other

12 SPECIAL HANDLING INSTRUCTIONS: ☒ Gloves ☒ Goggles ☐ Respirator ☒ Other Drums not leaking - Rungs tight

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802

13 Signature of Authorized Agent and Title Delores M. Krieg, Traffic Manager Date Shipped 4-2-84

TRANSPORTER

(HAULER MUST COMPLETE)

14 TRANSPORTER NAME Oil and Solvent Process Company
ADDRESS 9131 E. 96th Avenue PHONE (303) 289-4827
CITY, STATE, ZIP Henderson, Colorado 80640

15 PICK-UP DATE 4-2-84
EPA NO. C10101918101519111114 Time 1:45 ☐ AM ☒ PM
Signature of Authorized Agent and Title Driver Date 4-2-84

TSD FACILITY

(FACILITY-OPERATOR MUST COMPLETE)

17 Name Oil and Solvent Process Company 18 QUANTITY (If Measured) 7 Drums
EPA NO. C10101918101519111114 19 STATE FEE (If Any) _____
PHONE NO. (303) 289-4827

20 INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT:

None

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

22 Designated TSD Facility Name _____ EPA NO. _____
23 Signature of Authorized Agent and Title Tamie Bullard, Office Manager Date Accepted 4-2-84

21 HANDLING OR DISPOSAL METHOD:

☐ Recycling for Customer
☒ Recycling
☐ Disposal

for instructions.
or print clearly. Press Hard.

WASTE MANIFEST

1 Manifest Number 428-6-J467

Sent 4-17-84

GENERATOR (GENERATOR MUST COMPLETE)

Name Rockwell International
EPA # C O D 0 7 8 3 4 3 4 0 7
Address PO Box 466 Phone 303-497-2377
City, State, Zip Golden, CO 80401

3 Designated TSD Facility (Authorized to operate under an approved state program or federal program.)

Name Oil and Solvent Process Company

EPA # C O D 9 8 0 5 9 1 1 8 4
Address 9131 E. 96th Avenue Phone (303) 289-4827
City, State, Zip Henderson Colorado 80640

4 Alternate TSD Facility

Name Oil and Solvent Process Company

EPA # C A D 0 0 8 3 0 2 9 0
Address 1704 W. 1st Street Phone (213) 334-5117
City, State, Zip Azusa, California 91702

5 U.S. DOT PROPER SHIPPING NAME	HAZARD CLASS	UNHAZ. CLASS.	WEIGHT OR VOLUME	UNITS	NUMBER OF CONTAINERS	TYPE: <input checked="" type="checkbox"/> DRUMS <input type="checkbox"/> BAGS <input type="checkbox"/> CARTONS <input type="checkbox"/> TANK TRUCK <input type="checkbox"/> DUMP TRUCK <input type="checkbox"/> OTHER
WASTE Paints - <u>Flammable Liquid NOS</u>	<u>Flammable</u>	<u>1993</u>	<u>250</u>	<u>Gallon</u>	<u>5</u>	
WASTE <u>D001</u>	<u>Liquid</u>	<u>1993</u>	<u>EST.</u>			

6 Waste Category 49 7 Ext. Haz. Waste Permit No. N/A 8 Generating Process Surplus Paint

9 LIST COMPONENTS:	CONCENTRATION RANGE		UNITS	LIST COMPONENTS:	CONCENTRATION RANGE		UNITS
	UPPER	LOWER			UPPER	LOWER	
A. <u>Aliphatics</u>	<u>90</u>	<u>80</u>	<input checked="" type="checkbox"/> % <input type="checkbox"/> ppm.	E. _____			<input type="checkbox"/> % <input type="checkbox"/>
B. <u>Ketones</u>	<u>8</u>	<u>3</u>	<input checked="" type="checkbox"/> % <input type="checkbox"/> ppm.	F. _____			<input type="checkbox"/> % <input type="checkbox"/>
C. <u>Alcohols</u>	<u>4</u>	<u>2</u>	<input checked="" type="checkbox"/> % <input type="checkbox"/> ppm.	G. _____			<input type="checkbox"/> % <input type="checkbox"/>
D. <u>Aromatics</u>	<u>10</u>	<u>5</u>	<input checked="" type="checkbox"/> % <input type="checkbox"/> ppm.	Non-Hazardous Material <u>35-55</u> %			

10 WASTE PROPERTIES: pH 7 ☐ Toxic ☒ Flammable ☐ Corrosive/Irritant ☐ Reactive ☐ Sensitizer ☒ Carcinogen/Mutagen

11 PHYSICAL STATE: ☐ Solid ☒ Liquid ☐ Sludge ☐ Slurry ☐ Gas ☐ Other

12 SPECIAL HANDLING INSTRUCTIONS: ☒ Gloves ☒ Goggles ☐ Respirator ☒ Other Drums not leaking, bungs tight

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL
RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802

13 Signature of Authorized Agent and Title

Delores H. Krieg, Traffic Manager

4-2-84
Date Shipped

TRANSPORTER (HAULER MUST COMPLETE)

15 PICK-UP DATE 4-2-84

14 TRANSPORTER NAME Oil and Solvent Process Company
ADDRESS 9131 E. 96th Avenue PHONE (303) 289-4827
CITY, STATE, ZIP Henderson, Colorado 80640

EPA NO. C O D 9 8 0 5 9 1 1 8 4 Time 1:45 AM
16 Signature of Authorized Agent and Title John Wigby, Driver Date 4-2-84

TSD FACILITY (FACILITY-OPERATOR MUST COMPLETE)

17 Name Oil and Solvent Process Company 18 QUANTITY (If Measured) 5 Drums

EPA NO. C O D 9 8 0 5 9 1 1 8 4 19 STATE FEE (If Any) _____
PHONE NO. (303) 289-4827

20 INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT:

None

21 HANDLING OR DISPOSAL METHOD

☐ Recycling ☒ Customer
☒ Recycling
☐ Disposal

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

22 Designated TSD Facility Name

EPA NO. _____

23 Janice Ballard, office manager
Signature of Authorized Agent and Title

4-2-84
Date Accepted

OIL & SOLVEN (100888 COMPANY) WAREHOUSE MANIFEST

GENERATOR

U.S. DOT PROPER SHIPPING NAME						Hazard Class or Division	Packaging Group	Net Weight or Volume	UNIT OF MEASURE	NUMBER OF CONTAINERS
WASTE - Liquid NOS - Flammable liquid NOS								FLAMMABLE LIQ.	250	(gallon)
WASTE							Liquid	1993	E5	TYPE: <input type="checkbox"/> DRUMS <input type="checkbox"/> BAGS <input type="checkbox"/> CARTONS <input checked="" type="checkbox"/> TANK TRUCK <input type="checkbox"/> OTHER

[illegible]

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL
GENERATOR CERTIFICATION. This is to certify that the above named generator is in proper condition for transportation according to the applicable regulations of the Department of Transportation and EPA.

TRANSPORTER NAME Oil and Solvent Process Company
ADDRESS 9131 E. 96th Avenue PHONE (303) 289-1827
CITY, STATE, ZIP Henderson, Colorado 80640
Date 1/25/74
Signature of Authorized Agent and Title John J. [illegible]
PAID TO ORDER BY AMX 1/25/74

PHONE NO. (303) 288-4827

INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT:

☐ Recycling for Customer

☐ Recycling

☐ Disposal

GENERATOR - RETURN COPY

See ref. () or instructions.
Please type or print clearly. Press Hard.

OIL & SOLVENT PROCESS COMPANY
WASTE MANIFEST

Manifest Number 428 009499

GENERATOR

(GENERATOR MUST COMPLETE)

Name Rockwell International
EPA ID 01 01 01 01 71 13 14 13 14 01 71
Address Rocky Flats Plant Phone 303-497-2377
City, State, Zip PO Box 464, Golden, CO 80401

3 Designated TSD Facility (Authorized to operate under an approved state program or federal program.)

Name OIL & SOLVENT PROCESS COMPANY
EPA ID 01 01 01 01 01 01 01 01 01 01 01 01
Address 7130 Elm Street Phone 303)289-4827
City, State, Zip Adam City, Colorado 80022

4 Alternate TSD Facility

Name OIL & SOLVENT PROCESS COMPANY
EPA ID 01 01 01 01 01 01 01 01 01 01 01 01
Address 1704 W. 1st Street Phone 213)334-5111
City, State, Zip Azusa, California 91702

U.S. DOT PROPER SHIPPING NAME	U.S. DOT HAZARD CLASS	UN/NA ID NO.	WEIGHT OR VOLUME	UNITS	NUMBER OF CONTAINERS
WASTE Flammable Liquid, n.o.s.	Flammable	1993	2,750	Gallons	
WASTE (XU)	Liquid				
TYPE: <input type="checkbox"/> DRUMS <input type="checkbox"/> BAGS <input type="checkbox"/> CARTONS <input checked="" type="checkbox"/> TANK TRUCK <input type="checkbox"/> DUMP TRUCK <input type="checkbox"/> OTHER					

5 Waste Category #66 7 Ext. Haz. Waste Permit No. NA 8 Generating Process Cleaning paint equipment

LIST COMPONENTS:	CONCENTRATION RANGE	UNITS	LIST COMPONENTS:	CONCENTRATION RANGE	UNITS
A. Ketones	UPPER 12 LOWER 4	<input checked="" type="checkbox"/> % <input type="checkbox"/> ppm	E. <u>Non-Hazardous Material</u>	UPPER 24 LOWER 2	<input type="checkbox"/> % <input type="checkbox"/> ppm
B. Aromatics	5%	<input checked="" type="checkbox"/> % <input type="checkbox"/> ppm	F. <u>Non-Hazardous Material</u>	UPPER 24 LOWER 2	<input type="checkbox"/> % <input type="checkbox"/> ppm
C. Aliphatics	5%	<input checked="" type="checkbox"/> % <input type="checkbox"/> ppm	G. <u>Non-Hazardous Material</u>	UPPER 24 LOWER 2	<input type="checkbox"/> % <input type="checkbox"/> ppm
D. <u>Non-Hazardous Material</u>		<input type="checkbox"/> % <input type="checkbox"/> ppm			

9 WASTE PROPERTIES: pH 7 ☐ Toxic ☒ Flammable ☐ Corrosive/Irritant ☐ Reactive ☐ Sensitizer ☐ Carcinogen/Mutagen

10 PHYSICAL STATE: ☐ Solid ☒ Liquid ☐ Sludge ☐ Slurry ☐ Gas ☐ Other

11 SPECIAL HANDLING INSTRUCTIONS: ☒ Gloves ☒ Goggles ☐ Respirator ☐ Other

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL
RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802

13

Signature of Authorized Agent and Title

July 20, 1981

Date Shipped

TRANSPORTER

(HAULER MUST COMPLETE)

14 TRANSPORTER NAME OIL & SOLVENT PROCESS COMPANY
ADDRESS 7130 Elm Street PHONE 303) 289-4827
CITY, STATE, ZIP Adam City, Colorado 80022

15 PICK-UP DATE

7-20-81

EPA NO. 01 01 01 01 01 01 01 01 01 01 01 01 TIME 13 ☐ AM ☐ PM

16

Signature of Authorized Agent and Title

7-20-81

Date

TSD FACILITY

(FACILITY OPERATOR MUST COMPLETE)

17 NAME OIL & SOLVENT PROCESS COMPANY 18 QUANTITY (If Measured) _____
EPA NO. 01 01 01 01 01 01 01 01 01 01 01 01 19 STATE FEE (If Any) _____
PHONE NO. 303) 289-4827

21 HANDLING OR DISPOSAL METHOD:

- ☐ Recycling for Customer
☒ Recycling
☐ Landfill

20 INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT:

Measurement and evaluation to be performed on 7/20/81

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

22 Designated TSD Facility Name OIL & SOLVENT PROCESS COMPANY ADAM CITY, CA.

EPA NO. 01 01 01 01 01 01 01 01 01 01 01 01

23

Signature of Authorized Agent and Title

Date Accepted

Copy 1-WHITE: Facility Keep (Send Copy to DOT) Copy 2-YELLOW: To Transporter from TSD Copy 3-PINK: To Generator from TSD Copy 4-GOLDENROL: Generator Keep, 1st Copy to DOT

TRANSPORTER		OIL & SOLVENT PROCESS COMPANY		7130 Elm Street		PHONE 303)289-4527		ADDRESS		Adams City, Colorado 80022		CITY, STATE, ZIP		TSD FACILITY	
14 TRANSPORTER NAME		OIL & SOLVENT PROCESS COMPANY		7130 Elm Street		PHONE 303)289-4527		ADDRESS		Adams City, Colorado 80022		CITY, STATE, ZIP		TSD FACILITY	
15 PICK-UP DATE		EPA NO.		16		Signature of Authorized Agent and Title		Date		21 HANDLING OR DISPOSAL METHOD		TSD FACILITY		TSD FACILITY	
15 PICK-UP DATE		EPA NO.		16		Signature of Authorized Agent and Title		Date		21 HANDLING OR DISPOSAL METHOD		TSD FACILITY		TSD FACILITY	

6. Waste Category: 63

7. Ext. Haz. Waste Permit No. 47

8. Generating Process: Cleaning equipment and parts

9. List Components: 9A. Dichloromethane

10. List Components: 10A. Dichloromethane

11. Physical State: ☐ Solid ☒ Liquid ☐ Gas ☐ Other

12. Special Handling Instructions: ☐ Respirator ☐ Other

FOR INSTRUCTIONS
Print clearly. Press Hard.
Please
WASTE M. 'FEST
Manifest 428 - 908472
Number
(2)

FOR INSTRUCTIONS

MASTERS
TEST
1 Nightest 428 - 908472

See () for instructions.
Please print clearly. Press Hard.

WASTE MANIFEST

1 Manifest Number 428 908478 (3)

GENERATOR

(GENERATOR MUST COMPLETE)

2 Name Rockwell International
EPA # C 0 0 0 0 7 0 3 4 3 4 0 7
Address Rocky Flats Plant Phone 303-497-2577
City, State, Zip PO Box 464, Golden, CO 80401

3 Designated TSD Facility (Authorized to operate under an approved state program or federal program.)

Name OIL & SOLVENT PROCESS COMPANY
EPA # C 0 0 0 0 0 0 6 9 5 1 7 1
Address 7130 Elm Street Phone 303)289-4827
City, State, Zip Adams City, Colorado 80022

4 Alternate TSD Facility

Name OIL & SOLVENT PROCESS COMPANY
EPA # C A D 0 0 8 3 0 2 9 0
Address 1704 W. 1st Street Phone 213)334-
City, State, Zip Azusa, California 91702

5 U.S. DOT PROPER SHIPPING NAME	U.S. DOT HAZARD CLASS	UN/NA ID NO.	WEIGHT OR VOLUME	UNITS	NUMBER OF CONTAINERS
WASTE Trichloroethylene (RQ 1000/454)	694-A	1710	50	Gallons	1
WASTE F002					
TYPE: <input checked="" type="checkbox"/> DRUMS <input type="checkbox"/> BAGS <input type="checkbox"/> CARTONS					
<input type="checkbox"/> TANK TRUCK <input type="checkbox"/> DUMP TRUCK					
<input type="checkbox"/> OTHER					

6 Waste Category <u>63</u>	7 Ext. Haz. Waste Permit No. <u>H/A</u>	8 Generating Process <u>Cleaning equipment</u>					
LIST COMPONENTS:		CONCENTRATION RANGE	UNITS	LIST COMPONENTS:		CONCENTRATION RANGE	UNITS
9A Trichloroethylene		UPPER <u>35</u>	LOWER <u>60</u>	<input checked="" type="checkbox"/> % <input type="checkbox"/> ppm			
B				<input type="checkbox"/> % <input type="checkbox"/> ppm			
C				<input type="checkbox"/> % <input type="checkbox"/> ppm			
D				<input type="checkbox"/> % <input type="checkbox"/> ppm			
10 WASTE PROPERTIES: pH <u>6.4</u>		Non-Hazardous Material <u>15-40</u>					
<input type="checkbox"/> Toxic <input type="checkbox"/> Flammable <input type="checkbox"/> Corrosive/Irritant <input type="checkbox"/> Reactive <input type="checkbox"/> Sensitizer <input type="checkbox"/> Carcinogen/Mutagen							
11 PHYSICAL STATE: <input type="checkbox"/> Solid <input checked="" type="checkbox"/> Liquid <input type="checkbox"/> Sludge <input type="checkbox"/> Slurry <input type="checkbox"/> Gas <input type="checkbox"/> Other							
12 SPECIAL HANDLING INSTRUCTIONS: <input checked="" type="checkbox"/> Gloves <input checked="" type="checkbox"/> Goggles <input type="checkbox"/> Respirator <input type="checkbox"/> Other		<u>Burnt light - drum not leaking</u>					

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL CONTACT THE NATIONAL RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802

13 Doreen M. Krien Signature of Authorized Agent and Title
Date Shipped 12/15/81

TRANSPORTER

(HAULER MUST COMPLETE)

14 TRANSPORTER NAME OIL & SOLVENT PROCESS COMPANY
ADDRESS 7130 Elm Street PHONE 303)289-4827
CITY, STATE, ZIP Adams City, Colorado 80022

15 PICK-UP DATE 12/15/81
EPA NO. C 0 0 0 0 0 0 5 9 3 1 7 1 Time 14:00 ☐ AM ☒ PM
16 L. Hughes - DRIVER Signature of Authorized Agent and Title
Date 12/15/81

TSD FACILITY

(FACILITY OPERATOR MUST COMPLETE)

17 NAME OIL & SOLVENT PROCESS COMPANY 18 QUANTITY (If Measured) _____
EPA NO. C 0 0 0 0 0 0 6 9 5 1 7 1 19 STATE FEE (If Any) _____
PHONE NO. 303)289-4827

20 INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT:

To be measured and evaluated at the Azusa, CA. facility.

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

22 Designated TSD Facility Name OIL & SOLVENT PROCESS COMPANY

23 Doreen M. Krien Signature of Authorized Agent and Title

21 HANDLING OR DISPOSAL METHOD:

☐ Recycling for Customer
☒ Recycling
☐ Landfill

Received

DEC 21 81

D. M. Krien

EPA NO. C A D 0 0 8 3 0 2 9 0

12-15-81
Date Accepted

See () for instructions.
Please print clearly. Press Hard.

WASTE MANIFEST

1 Manifest Number 428 - 008301 (2)

GENERATOR

(GENERATOR MUST COMPLETE)

2 Name Rockwell International

EPA # C 0 D 0 7 8 3 4 3 4 7 7

Address Rocky Flats Plant Phone 303-497-2977

City, State, Zip PO Box 404, Golden, CO 80401

3 Designated TSD Facility (Authorized to operate under an approved state program or federal program.)

Name OIL & SOLVENT PROCESS COMPANY

EPA # C 0 D 0 0 0 6 9 5 1 7 1

Address 7130 Elm Street Phone 303)289-4827

City, State, Zip Adams City, Colorado 80022

7 Alternate TSD Facility

Name OIL & SOLVENT PROCESS COMPANY

EPA # C A D 0 0 8 3 0 2 9 0

Address 1704 W. 1st Street Phone 213)334-

City, State, Zip Azusa, California 91702

5 U.S. DOT PROPER SHIPPING NAME

WASTE Hazardous Waste, Liquid, H.O.S.

WASTE F002

U.S. DOT HAZARD CLASS

9132

UN/NA ID NO.

9132

WEIGHT OR VOLUME

DRUM

UNITS

Drums

NUMBER OF CONTAINERS

TYPE: ☐ DRUMS ☐ BAGS ☐ CARTONS
☐ TANK TRUCK ☐ DUMP TRUCK
☐ OTHER

6 Waste Category 03

7 Ext. Haz. Waste Permit No. N/A

8 Generating Process Cleaning Parts

LIST COMPONENTS:

CONCENTRATION RANGE
UPPER LOWER

UNITS

9 A. Trichloro-trifluoroethene 75 25 ☒ % ☐ ppm.
B. ☐ % ☐ ppm.
C. ☐ % ☐ ppm.
D. ☐ % ☐ ppm.

LIST COMPONENTS:

CONCENTRATION RANGE
UPPER LOWER

UNITS

E. ☐ % ☐ ppm.
F. ☐ % ☐ ppm.
G. ☐ % ☐ ppm.
Non-Hazardous Material 5-30 %

10 WASTE PROPERTIES: pH 6.5 ☐ Toxic ☐ Flammable ☐ Corrosive/Irritant ☐ Reactive ☐ Sensitizer ☐ Carcinogen/Mutagen

11 PHYSICAL STATE: ☐ Solid ☒ Liquid ☐ Sludge ☐ Slurry ☐ Gas ☐ Other

12 SPECIAL HANDLING INSTRUCTIONS: ☒ Gloves ☒ Goggles ☐ Respirator ☐ Other Wear light - drums not raking

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL CONTACT THE NATIONAL RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802

13 Delivered to TSD
Signature of Authorized Agent and Title Delores M. King, Traffic

Date Shipped 12/15/81

TRANSPORTER

(HAULER MUST COMPLETE)

14 TRANSPORTER NAME OIL & SOLVENT PROCESS COMPANY

ADDRESS 7130 Elm Street PHONE 303)289-4827

CITY, STATE, ZIP Adams City, Colorado 80022

15 PICK-UP DATE

EPA NO. C 0 D 0 0 0 0 6 9 5 1 7 1 Time 1:15 ☐ AM ☐ PM

16 L. Hughes - Driver 12/15/81
Signature of Authorized Agent and Title Date

TSD FACILITY

(FACILITY OPERATOR MUST COMPLETE)

17 NAME OIL & SOLVENT PROCESS COMPANY 18 QUANTITY (If Measured)

EPA NO. C 0 D 0 0 0 0 6 9 5 1 7 1 19 STATE FEE (If Any)

PHONE NO. 303)289-4827

21 HANDLING OR DISPOSAL METHOD:

☐ Recycling for Customer
☒ Recycling
☐ Landfill

Received

DEC 21 81

D. M. King

20 INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT:

To be measured and evaluated at the Azusa, CA facility.

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

22 Designated TSD Facility Name OIL & SOLVENT PROCESS COMPANY

23 Delivered to TSD
Signature of Authorized Agent and Title

EPA NO. C A D 0 0 0 0 8 3 0 2 9 0

Date Accepted 12-15-81

See reverse or instructions.
Please print clearly. Press Hard.

WASTE MANIFEST

1 Manifest Number **428 - 008354**

GENERATOR

(GENERATOR MUST COMPLETE)

3 Designated TSD Facility (Authorized to operate under an approved state program or federal program.)

4 Alternate TSD Facility

2 Name **Rockwell International**

Name **OIL & SOLVENT PROCESS COMPANY**

Name **OIL & SOLVENT PROCESS COMPANY**

EPA ID **C10D1017131314107**

EPA ID **C10D1010069511711**

EPA ID **C1A1D10108131021910**

Address **Rocky Flats Plant** Phone **303-497-2377**

Address **7130 Elm Street** Phone **303)289-4827**

Address **1704 W. 1st Street** Phone **213)334**

City, State, Zip **Box 404, Golden, CO 80401**

City, State, Zip **Adams City, Colorado 80022**

City, State, Zip **Azusa, California 91702**

U.S. DOT PROPER SHIPPING NAME	U.S. DOT HAZARD CLASS	UN/NA ID NO.	WEIGHT OR VOLUME	UNITS	NUMBER OF CONTAINERS	TYPE:
WASTE Ethylene Glycol Monomethyl Ether	Combustible	1171	50	Gallons	1	<input type="checkbox"/> DRUMS <input type="checkbox"/> BAGS <input type="checkbox"/> CARTONS
WASTE (Colloids)	Liquid					<input type="checkbox"/> TANK TRUCK <input type="checkbox"/> DUMP TRUCK
						<input type="checkbox"/> OTHER

6 Waste Category **60** 7 Ext. Haz. Waste Permit No. **N/A** 8 Generating Process **Cleaning paint equipment**

LIST COMPONENTS:

CONCENTRATION RANGE
UPPER LOWER

UNITS

LIST COMPONENTS:

CONCENTRATION RANGE
UPPER LOWER

UNITS

9 A. **Glycol ether** 20 75 ☒ % ppm.
B. ☐ % ppm.
C. ☐ % ppm.
D. ☐ % ppm.

E. ☐ % ppm.
F. ☐ % ppm.
G. ☐ % ppm.
Non-Hazardous Material **10-25** %

10 WASTE PROPERTIES: pH **7** ☐ Toxic ☐ Flammable ☐ Corrosive/Irritant ☐ Reactive ☐ Sensitizer ☐ Carcinogen/Mutagen

11 PHYSICAL STATE: ☐ Solid ☒ Liquid ☐ Sludge ☐ Slurry ☐ Gas ☐ Other

12 SPECIAL HANDLING INSTRUCTIONS: ☒ Gloves ☒ Goggles ☐ Respirator ☐ Other **Bung tight - drum not leaking**

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802

13 **Delores M. Krieg** Signature of Authorized Agent and Title **Delores M. Krieg, Traffic Manager** Date Shipped **12/15/81**

TRANSPORTER

(HAULER MUST COMPLETE)

14 TRANSPORTER NAME **OIL & SOLVENT PROCESS COMPANY**

EPA NO. **C10D1010101511711** ☐ AM ☐ PM

ADDRESS **7130 Elm Street** PHONE **303)289-4827**

CITY, STATE, ZIP **Adams City, Colorado 80022**

16 **L. Hughes** Signature of Authorized Agent and Title **L. Hughes - Driver** Date **12/15/81**

TSD FACILITY

(FACILITY OPERATOR MUST COMPLETE)

17 NAME **OIL & SOLVENT PROCESS COMPANY** 18 QUANTITY (If Measured)

EPA NO. **C10D1010101511711** 19 STATE FEE (If Any)

PHONE NO. **303) 289-4827**

21 HANDLING OR DISPOSAL METHOD:

☐ Recycling for Customer
☒ Recycling
☐ Landfill

Received

DEC 21 1981

D. M. Krieg

20 INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT:

To be measured and evaluated at the Azusa, CA, facility.

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

22 Designated TSD Facility Name **OIL & SOLVENT PROCESS COMPANY**

EPA NO. **C1A1D10108131021910**

23 **Constance Ball** Signature of Authorized Agent and Title

12-15-81 Date Accepted

See () for instructions.
Please print clearly. Press Hard.

RECEIVED
JUL 14 '82

OIL & SOLVENT PROCESS COMPANY WASTE MANIFEST

2/1/82
Manifest Number 428 - 010759

GENERATOR

(GENERATOR MUST COMPLETE)

D. M. KRIEG

2 Name Rockwell International
EPA # C 10 10 10 17 18 13 14 13 14 10 17
Address Rocky Flats Plant Phone 303-497-2377
City, State, Zip PO Box 464, Golden, CO 80401

3 Designated TSD Facility (Authorized to operate under an approved state program or federal program.)

Name Oil and Solvent Process Company
EPA # C 10 10 10 10 10 16 19 15 11 17 11
Address 7130 Elm Street Phone (303)289-4827
City, State, Zip Adams City Colorado 80022

4 Alternate TSD Facility

Name Oil and Solvent Process Company
EPA # C 10 10 10 10 10 16 19 15 11 17 11
Address 1704 1st Street Phone (213)334-51
City, State, Zip Azusa California 91702

U.S. DOT PROPER SHIPPING NAME	U.S. DOT HAZARD CLASS	UN/NA ID NO.	WEIGHT OR VOLUME	UNITS	NUMBER OF CONTAINERS
WASTE <u>Flammable Liquid, N.O.S.</u>	<u>Flammable</u>	<u>1993</u>	<u>100</u>	<u>Gallons</u>	
WASTE <u>DDU1</u>	<u>Liquid</u>				

TYPE: ☐ DRUMS ☐ BAGS ☐ CARTONS
☐ TANK TRUCK ☐ DUMP TRUCK
☐ OTHER

6 Waste Category 66

LIST COMPONENTS:	CONCENTRATION RANGE	UNITS	LIST COMPONENTS:	CONCENTRATION RANGE	UNITS
9 A. <u>Aromatics</u>	<u>60</u>	<input checked="" type="checkbox"/> % <input type="checkbox"/> ppm			
B. <u>Aliphatics</u>	<u>25</u>	<input type="checkbox"/> % <input type="checkbox"/> ppm			
C. <u>Alcohols</u>		<input type="checkbox"/> % <input type="checkbox"/> ppm			
D. <u></u>					

10 WASTE PROPERTIES: pH 7
11 PHYSICAL STATE: ☐ Solid ☒ Liquid
12 SPECIAL HANDLING INSTRUCTION Gloves, Goggles, Respirator, Boots, Rungs tight - drums not leaking

GENERATOR CERTIFICATION: This certifies that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL RESPONSE CENTER, U.S. CHEMICAL HAZARD INVESTIGATION CENTER, 24 HOURS A DAY, 7 DAYS A WEEK, 1-800-424-8802.

TRANSPORTER

(HAULER MUST COMPLETE)

14 TRANSPORTER NAME Oil and Solvent Process Company
ADDRESS 7130 Elm Street PHONE (303)289-4827
CITY, STATE, ZIP Adams City Colorado 80022

15 PICK-UP DATE 6/28/82
EPA NO. C 10 10 10 10 10 16 19 15 11 17 11 Time 10:00 AM ☐ PM ☐
16 Mike Japhet Driver Mike Japhet
Signature of Authorized Agent and Title Date 6/28/82

TSD FACILITY

(FACILITY-OPERATOR MUST COMPLETE)

17 NAME Oil and Solvent Process Company 18 QUANTITY (If Measured) _____
EPA NO. C 10 10 10 10 10 16 19 15 11 17 11 19 STATE FEE (If Any) _____
PHONE NO. (303)289-4827

20 INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT:

To be measured and evaluated at the Azusa facility

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

22 Designated TSD Facility Name Oil and Solvent Process Company

21 HANDLING OR DISPOSAL METHOD:

- ☐ Recycling for Customer
☒ Recycling
☐ Landfill

EPA NO. C A D 0 0 0 3 0 2 9 0 2

23 Mike Japhet
Signature of Authorized Agent and Title

Date Accepted

4c
a side for instructions
print clearly, Press Hard

OIL & SOLVENT
WASTE
LESS COMPANY

1 Manifest Number
B/L 21233
428 - 010350

GENERATOR

2 Name Hockwell International
3 Designated TSD Facility (Authorized to operate under an approved state program or federal program)
4 Alternate TSD Facility

Address: Hockwell State Plant, Phone: 303-497-2377
City, State, Zip: Golden, CO - 80401

5 U.S. DOT PROPER SHIPPING NAME: WASTE Carbon Tetrachloride, ORM-A
WASTE F002
U.S. DOT HAZARD CLASS: 6.1
U.S. DOT HAZARD CODE: 6.1/0

6 Waste Category: 63
LIST COMPONENTS: UPPER LOWER UNITS
9 A. Carbon Tetrachloride 98

8 WASTE PROPERTIES: pH 8.6
1 PHYSICAL STATE: ☐ Solid ☐ Liquid
2 SPECIAL HANDLING INSTRUCTION: ☐ Gases ☐ Liquids ☐ Solids

GENERATOR CERTIFICATION: This generator certifies that the waste is properly managed, and that the waste is not released into the environment.
IN THE EVENT OF A SPILL, CONTACT THE NATIONAL RESPONSE CENTER, U.S. Coast Guard, 24-Hour, 1-800-424-8802

TRANSPORTER
(HAULER AND/OR TRANSPORTER)
TRANSPORTER NAME: OIL & SOLVENT PROCESS COMPANY
ADDRESS: 9131 E. 96th Avenue, Phone: 303-289-4827
City, State, Zip: Henderson, Colorado 80640

TSD FACILITY
(FACILITY-OPERATOR MUST COMPLETE)
NAME: OIL & SOLVENT PROCESS COMPANY
EPA NO. LC101918101519111814
PHONE NO. 303-289-4827

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:
75 Gallons Difference

23 Signature of Authorized Agent and Title: *James B. ...*
Date Accepted: 11-23-82

21 HANDLING OR DISPOSAL METHOD:
☐ Landfill
☐ Recycling
☐ Recycling for Customer

11-23-82
EPA NO. LC101918101519111814

Copy 1-WHITE: TSD Facility (Keep) (Send Copy to DOT)
Copy 2-YELLOW: To Transporter from TSD
Copy 3-PINK: To Generator from TSD
Copy 4-GOLDENMOD: Generator (Keep) (Send Copy to DOT)

See reverse side for instructions.
Please print or print clearly. Press Hard.

OIL & SOLVENT PROCESS COMPANY WA () MANIFEST

B/L# 21752

1 Manifest Number 428-

1840
476

GENERATOR (GENERATOR MUST COMPLETE)

2 Name Rockwell International
EPA # C O D 9 8 0 5 9 1 1 8 4
Address Rocky Flats Plant Phone 303-497-2377
City, State, Zip Golden, CO 80401

3 Designated TSD Facility (Authorized to operate under an approved state program or federal program.)
Name Oil and Solvent Process Company
EPA # C O D 9 8 0 5 9 1 1 8 4
Address 9131 E. 96th Avenue Phone (303) 289-4827
City, State, Zip Henderson Colorado 80640

4 Alternate TSD Facility
Name Oil and Solvent Process Company
EPA # C A D 0 0 8 3 0 2 9 0
Address 1704 W. 1st Street Phone (213) 334-5117
City, State, Zip Azusa, California 91702

5 U.S. DOT PROPER SHIPPING NAME	U.S. DOT HAZARD CLASS	U.S. DOT ID NO.	WEIGHT OR VOLUME	UNITS	NUMBER OF CONTAINERS	TYPE: <input checked="" type="checkbox"/> DRUMS <input type="checkbox"/> BAGS <input type="checkbox"/> CARTONS <input type="checkbox"/> TANK TRUCK <input type="checkbox"/> DUMP TRUCK <input type="checkbox"/> OTHER
WASTE Compound, Paint Thinning, Liquid	Combustible	NA1142	150	Gallons	3	
WASTE 0001	Liquid		Est.			

6 Waste Category 64 7 Ext. Haz. Waste Permit No. NA1142 8 Generating Process Cleaning paint equipment

9 LIST COMPONENTS:	CONCENTRATION RANGE		UNITS	LIST COMPONENTS:	CONCENTRATION RANGE		UNITS
	UPPER	LOWER			UPPER	LOWER	
A. <u>Aliphatic</u>	<u>90</u>	<u>80</u>	<input checked="" type="checkbox"/> % <input type="checkbox"/> ppm	E. <u>Non-Hazardous Material</u>			<input type="checkbox"/> % <input type="checkbox"/> ppm
B. <u></u>			<input type="checkbox"/> % <input type="checkbox"/> ppm	F. <u></u>			<input type="checkbox"/> % <input type="checkbox"/> ppm
C. <u></u>			<input type="checkbox"/> % <input type="checkbox"/> ppm	G. <u></u>			<input type="checkbox"/> % <input type="checkbox"/> ppm
D. <u></u>			<input type="checkbox"/> % <input type="checkbox"/> ppm				

10 WASTE PROPERTIES: pH 7 ☐ Toxic ☐ Flammable ☐ Corrosive/Irritant ☐ Reactive ☐ Sensitizer ☐ Carcinogen/Mutagen

11 PHYSICAL STATE: ☐ Solid ☒ Liquid ☐ Sludge ☐ Slurry ☐ Gas ☐ Other

12 SPECIAL HANDLING INSTRUCTIONS: ☒ Gloves ☒ Goggles ☐ Respiratory ☒ Other Bungs tight, drums not leaking

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8602

13 Signature of Authorized Agent and Title: D. M. KRIEG
Date Shipped 3/2/83

TRANSPORTER (HAULER MUST COMPLETE)

14 TRANSPORTER NAME Oil and Solvent Process Company
ADDRESS 9131 E. 96th Avenue PHONE (303) 289-4827
CITY, STATE, ZIP Henderson, Colorado 80640

15 PICK-UP DATE

EPA NO. C O D 9 8 0 5 9 1 1 8 4 Time ☐ AM ☐ PM
16 Termin M. Loya
Signature of Authorized Agent and Title
Date 3-3-83

TSD FACILITY (FACILITY-OPERATOR MUST COMPLETE)

17 Name Oil and Solvent Process Company 18 QUANTITY (If Measured) 140 Gallons
EPA NO. C O D 9 8 0 5 9 1 1 8 4 19 STATE FEE (If Any)
PHONE NO. (303) 289-4827

20 INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT:
10 Gallons Difference

21 HANDLING OR DISPOSAL METHOD:
☐ Recycling for Containers
☐ Recycling
☐ Disposal
RECEIVED
MAR 21 '83

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

22 Designated TSD Facility Name

23 D. M. KRIEG
Signature of Authorized Agent and Title

EPA NO. C O D 9 8 0 5 9 1 1 8 4
Date Accepted 3-3-83

GENERATOR - RETURN COPY

See reverse for instructions.
Please print clearly. Press Hard.

2175 B/L#

428-

2 Designated TSD Facility (authorized to operate under an approved title program or federal program)
 3 Alternative TSD Facility
 Name Oil and Solvent Process Company

[illegible]

5 U.S. DOT PROPER SHIPPING NAME:	WASTE, 1,1,1-Trichloroethane	ORIG. A	MSDS 1	15	Gallons	TYPE: <input checked="" type="checkbox"/> DRUMS <input type="checkbox"/> BAGS <input type="checkbox"/> CARTONS <input type="checkbox"/> TANK TRUCK <input type="checkbox"/> DUMP TRUCK <input type="checkbox"/> OTHER	NUMBER OF CONTAINERS	3
WASTE	F002							

[illegible][illegible]

0 WASTE PROPERTIES: PH 5.8 ☐ Toxic ☐ Flammable ☐ Corrosive ☐ Reactive ☐ Sensitizer ☐ Carcinogen/Mutagen

1 PHYSICAL STATE: ☐ Solid ☐ Liquid ☐ Gas ☐ Volatile ☐ Non-volatile ☐ Other

2 SPECIAL HANDLING INSTRUCTIONS: ☐ Gases ☐ Liquids ☐ Solids ☐ Other

GENERATION CERTIFICATION: This is to certify that the above named person(s) has/have been issued a valid passport by the Department of Transportation and is/are eligible for transportation according to the applicable regulations of the Department of Transportation and is/are eligible for transportation according to the applicable regulations of the Department of Transportation.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL RESPONSE CENTER AT 1-800-967-7887

DATE ISSUED: 3/12/03

TRANSPORTER NAME OFF AND SOLENT PROCESS COMPANY

[illegible]

ISD FACILITY _____
(FACILITY OPERATOR MUST COMPLETE)
 Name: Oil and Solvent Process Company
 18 QUANTITY BY MEDIAN _____
 EPA NO: C 10 D 9 8 1 0 6 9 1 1 8 1 4 IS STATE FEE (Any)
 PHONE NO: (303) 288-4827
☐ Recycling for Customer
21 HANDLING OR DISPOSAL METHOD:

0 INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT.

PHONE NO. (year, ext. year)

☐ Recycling

☐ Disposal

2 Designated TSD Facility Name _____
 23 *James B. ...*
 Signature of Authorized Agent and Title _____
 Date Accepted _____

See back for instructions.
Please print clearly. Press Hard.

WAS ANIFEST

1 Manifest Number 428-468

Sent 4-11-84

GENERATOR (GENERATOR MUST COMPLETE)

2 Name Rockwell International
EPA # C O D 0 7 8 3 4 3 4 0 7
Address PO Box 464 Phone 303-497-2377
City, State, Zip Golden, CO 80401

3 Designated TSD Facility (Authorized to operate under an approved state program or federal program.)

Name Oil and Solvent Process Company
EPA # C O D 0 8 0 5 9 1 1 8 4
Address 9131 E. 96th Avenue Phone (303) 289-4827
City, State, Zip Henderson Colorado 80640

4 Alternate TSD Facility

Name Oil and Solvent Process Company
EPA # C A D 0 0 8 3 0 2 9 0
Address 1704 W. 1st Street Phone (213) 334-5117
City, State, Zip Azusa, California 91702

5 U.S. DOT PROPER SHIPPING NAME

WASTE FLAMMABLE LIQUID, N.O.S.

U.S. DOT HAZARD CLASS

FLAMMABLE

UN NO.

UN1993

WEIGHT OR VOLUME

200

UNITS

gallons

NUMBER OF CONTAINERS

4

TYPE: ☐ DRUMS ☐ BAGS ☐ CARTONS
☐ TANK TRUCK ☐ DUMP TRUCK
☐ OTHER

WASTE

0001

LIQUID

EST

6 Waste Category 66

7 Ext. Haz. Waste Permit No. N/A

8 Generating Process Equipment Cleaning

9 LIST COMPONENTS:

CONCENTRATION RANGE
UPPER LOWER

UNITS

A. Aliphatics 90 80 ☐ % ☐ ppm.
B. Ketones 8 3 ☐ % ☐ ppm.
C. Alcohols 4 2 ☐ % ☐ ppm.
D. Aromatics 10 5 ☐ % ☐ ppm.

LIST COMPONENTS:

CONCENTRATION RANGE
UPPER LOWER

UNITS

E. Non-Hazardous Material 15-35 %
F. 15-35 %
G. 15-35 %

10 WASTE PROPERTIES: pH 7 ☐ Toxic ☒ Flammable ☐ Corrosive/Irritant ☐ Reactive ☐ Sensitizer ☐ Carcinogen/Mutagen

11 PHYSICAL STATE: ☐ Solid ☒ Liquid ☐ Sludge ☐ Slurry ☐ Gas ☐ Other

12 SPECIAL HANDLING INSTRUCTIONS: ☒ Gloves ☒ Goggles ☐ Respirator ☒ Other Drums not leaking - bungs tight

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL
RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802

13

Signature of Authorized Agent and Title

Delores M. Krieg, Traffic Manager

Date Shipped

4-2-8

TRANSPORTER (HAULER MUST COMPLETE)

14 TRANSPORTER NAME Oil and Solvent Process Company
ADDRESS 9131 E. 96th Avenue PHONE (303) 289-4827
CITY, STATE, ZIP Henderson, Colorado 80640

15 PICK-UP DATE 4-2-84

EPA NO. C O D 0 8 0 5 9 1 1 8 4 Time 1:45 ☐ AM

16 Driver 4-2-84
Signature of Authorized Agent and Title Date

TSD FACILITY (FACILITY-OPERATOR MUST COMPLETE)

17 Name Oil and Solvent Process Company 18 QUANTITY (If Measured) 4 Drums
EPA NO. C O D 0 8 0 5 9 1 1 8 4 19 STATE FEE (If Any)
PHONE NO. (303) 289-4827

21 HANDLING OR DISPOSAL METHOD

☐ Recycling for Customer
☒ Recycling
☐ Disposal

20 INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT:

None

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

22 Designated TSD Facility Name

23

Signature of Authorized Agent and Title

Tanice Ballard
TSD FACILITY

EPA NO.

Date Accepted

4-2-8

1 Month: 428-10488
Number

GENERATOR (GENERATOR
MUST COMPLETE)

2Name Rockwell International
EPA # C O O U 7 8 3 4 3 4 0 7
Address PU Box 464 Phone 303-497-2377
City, State, Zip Golden, CO 80401

3 Designated TSD Facility (Authorized to operate under an approved state program or federal program.)
Oil and Solvent Process Company

4 Alternate TSD Facility
Name: Oil and Solvent Process Company

NAME C O D EPA # 9131 E 96th Avenue Phone (303) 228-4827
Address Henderson Colorado 80640
City/State/Zip

EPA # C-0-A-D-0-1-0-7-8-9-0-0-2-1-2-0-0
Address 1704 W. 1st Street AMO (B) (T3) 334-6117
City, State, Zip Azusa, California 91702

5 U.S. DOT PROPER SHIPPING NAME	HAZARD CLASS	HAZARD ID NO.	PG	NET WT.	NUMBER OF CONTAINERS	TYPE
WASTE FLAMMABLE LIQUID, N.O.S.	FLAMMABLE	UN1993	200	gallons		<input type="checkbox"/> DRUMS <input type="checkbox"/> BAGS <input type="checkbox"/> CARBONS <input type="checkbox"/> TANK TRUCK <input type="checkbox"/> CUMULATIVE
WASTE	LIQUID	1	EST			<input type="checkbox"/> OTHER

State Category: (11) Ext. Haz. Waste Remediation, Cleanup, and Abatement, and Environmental Remediation and Cleanup

9 LIST COMPONENTS:

- A. Aliphatics
B. Ketones
C. Alcohols
D. Aromatics

CONCENTRATION RANGE
UPPER LOWER

UNITS

LIST COMPONENTS

CONCENTRATION RANGE
UPPER LOWER

UNITS

☐ % ☐ Dpt
☐ % ☐ Dpt
☐ % ☐ Dpt

10 WASTE PROPERTIES: pH 7 ☐ Toxic ☒ Flammable ☐ Corrosive/Irritant ☐ Reactive ☐ Sensitizer ☐ Carcinogen/Mutagen

11 PHYSICAL STATE: ☐ Solid ☒ Liquid ☐ Sludge ☐ Slurry ☒ Gas ☐ Other

12 SPECIAL HANDLING INSTRUCTIONS: ☒ Gloves ☒ Goggles ☐ Respirator ☒ Other

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and EPA.

**IN THE EVENT OF A SPILL, CONTACT THE NATIONAL
RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802**

Deborah M. Krieg, Traffic Manager

TRANSPORTER (HAULER MUST COMPLETE)

4 TRANSPORTER NAME Oil and Solvent Process Company
ADDRESS 9131 E. 96th Avenue PHONE (303)
CITY, STATE, ZIP Henderson, Colorado 80640

15 PICK-UP DATE 7-2-89

EPANOLCIGDISR-01570111PR1A1T
10 AM PM
[Signature]
Signature of Authorized Agent and Title Date

TSD FACILITY (FACILITY-OPERATOR MUST COMPLETE)

17 Name Oil and Solvent Process Company 18 QUANTITY (If Measured)
EPANOI C O D 9 8 0 5 9 1 1 8 4 19 STATE FEE (If Any)
PHONE NO. (303) 289-4827

21. HANDLING OR DISPOSAL METHOD:

☐ Recycling for Customer
☐ Recycling
☐ Disposal

DO INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

22 Designated TSD Facility Name

23 _____
Signature of Authorized Agent and Title

Date Accepted

GENERATOR RETURN COPY

See reverse for instructions.
Please type or print clearly. Press Hard.

OIL & SOLVENT WASTE MANIFEST

CESS COMPANY

B/L# 428-01
1 Manifest Number
4-11
Sent 4-19-84

GENERATOR

(GENERATOR MUST COMPLETE)

2 Name Rockwell International
EPA # C O D 0 7 8 3 4 3 4 0 7
Address PO Box 464 Phone 303-497-2377
City, State, Zip Golden, CO 80401

3 Designated TSD Facility (Authorized to operate under an approved state program or federal program.)

Name Oil and Solvent Process Company
EPA # C O D 9 8 0 5 9 1 1 8 4
Address 9131 E. 98th Avenue Phone (303) 289-4827
City, State, Zip Henderson Colorado 80640

4 Alternate TSD Facility

Name Oil and Solvent Process Company
EPA # C A D 0 0 8 3 0 2 9 0 3
Address 1704 W. 1st Street Phone (213) 334-5117
City, State, Zip Azusa, California 91702

5 U.S. DOT PROPER SHIPPING NAME

WASTE FLAMMABLE LIQUID, N.O.S.

WASTE

D001

U.S. DOT HAZARD CLASS

FLAMMABLE

LIQUID

UN

1993

WEIGHT OR VOLUME

110

UNITS

gallons

NUMBER OF CONTAINERS

4

TYPE: ☐ DRUMS ☐ BAGS ☐ CARTONS
☐ TANK TRUCK ☐ DUMP TRUCK
☐ OTHER

6 Waste Category 66

7 Ext. Haz. Waste Permit No. N/A

8 Generating Process Equipment Cleaning

9 LIST COMPONENTS:

CONCENTRATION RANGE
UPPER LOWER

UNITS

A. Aliphatics 90 80 ☒ % ☐ ppm
B. Ketones 8 3 ☒ % ☐ ppm
C. Alcohols 4 2 ☒ % ☐ ppm
D. Aromatics 10 5 ☒ % ☐ ppm

LIST COMPONENTS:

CONCENTRATION RANGE
UPPER LOWER

UNITS

E. Non-Hazardous Material 15 - 35 %
F. Non-Hazardous Material 15 - 35 %
G. Non-Hazardous Material 15 - 35 %
☐ % ☐ ppm
☐ % ☐ ppm
☐ % ☐ ppm

10 WASTE PROPERTIES: pH 7 ☐ Toxic ☒ Flammable ☐ Corrosive/Irritant ☐ Reactive ☐ Sensitizer ☐ Carcinogen/Mutagen

11 PHYSICAL STATE: ☐ Solid ☒ Liquid ☐ Sludge ☐ Slurry ☐ Gas ☐ Other

12 SPECIAL HANDLING INSTRUCTIONS: ☒ Gloves ☒ Goggles ☐ Respirator ☒ Other Drums not leaking - hungs right

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL
RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802

13 X

Signature of Authorized Agent and Title

Delores M. Krieg, Traffic Manager

Date Shipped 4-2-84

TRANSPORTER

(HAULER MUST COMPLETE)

15 PICK-UP DATE 4-2-84

14 TRANSPORTER NAME Oil and Solvent Process Company

ADDRESS 9131 E. 98th Avenue PHONE (303) 289-4827

CITY, STATE, ZIP Henderson, Colorado 80640

EPA NO. C O D 9 8 0 5 9 1 1 8 4

16 Jon Wigby
Signature of Authorized Agent and Title

Date

TSD FACILITY

(FACILITY-OPERATOR MUST COMPLETE)

17 Name Oil and Solvent Process Company

18 QUANTITY (If Measured) 4 Drums

EPA NO. C O D 9 8 0 5 9 1 1 8 4 19 STATE FEE (If Any)

PHONE NO. (303) 289-4827

20 INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT:
None

21 HANDLING OR DISPOSAL METHOD:

☐ Recycling for Customer
☒ Recycling
☐ Disposal

IF WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

22 Designated TSD Facility Name

23 Jon Wigby
Signature of Authorized Agent and Title

Office Manager

EPA NO. C O D 9 8 0 5 9 1 1 8 4

Date Accepted 4-2-84

or instructions.
Type or print clearly: Press Hard.

OIL & SOLVENT PROCESS COMPANY

B/L#

MANIFEST

428-512168

GENERATOR

(GENERATOR MUST COMPLETE)

Rockwell International

PO Box 466 Phone 303-497-2377

State, Zip Golden, CO 80401

Designated TSD Facility (Authorized to operate under an approved state program or federal program.)

Name Oil and Solvent Process Company

Address 9131 E. 98th Avenue Phone (303) 289-4827

City, State, Zip Henderson Colorado 80640

Alternate TSD Facility

Name Oil and Solvent Process Company

Address 1704 W. 1st Street Phone (619) 334-5117

City, State, Zip Azusa California 91702

DOT PROPER SHIPPING NAME

STEFLAMMABLE LIQUID, N.O.S.

STE D001

HAZARD CLASS

FLAMMABLE

LIQUID

UN1993

110

gallons

NUMBER OF CONTAINERS

TYPE ☐ DRUMS ☐ BAGS ☐ CARTONS

☐ TANK TRUCK ☐ DUMP TRUCK

☐ OTHER

Category

Ext. Haz. Waste, Waste from Process, General Process Equipment Cleaning

LIST COMPONENTS:

Aliphatics

Ketones

Alcohols

Aromatics

CONCENTRATION RANGE

UPPER

91

LOWER

80

UNITS

%

LIST COMPONENTS:

CONCENTRATION RANGE

UPPER

100

LOWER

10

UNITS

%

ppm

%

ppm

STE PROPERTIES: pH

7

☐ Toxic

☐ Flammable

☐ Corrosive

☐ Reactive

☐ Sanitizer

☐ Carcinogen

PHYSICAL STATE:

☐ Solid

☒ Liquid

☐ Sludge

☐ Paste

ADDITIONAL HANDLING INSTRUCTIONS:

☒ Gloves

☒ Goggles

☐ Respirator

☐ Protective Clothing

GENERATOR CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and EPA.

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL

RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802

Signature of Authorized Agent and Title

Signature of Authorized Agent and Title

TRANSPORTER

(HAULER MUST COMPLETE)

TRANSPORTER NAME Oil and Solvent Process Company

ADDRESS 9131 E. 98th Avenue

PHONE (303) 289-4827

STATE, ZIP Henderson, Colorado 80640

15 PICKUP DATE

6/2/84

EPA NO. C O D 9 8 0 5 9 1 1 8 4

Signature of Authorized Agent and Title

Signature of Authorized Agent and Title

SD FACILITY

(FACILITY-OPERATOR MUST COMPLETE)

Oil and Solvent Process Company

18 QUANTITY (If Measured)

NO. C O D 9 8 0 5 9 1 1 8 4 19 STATE FEE (If Any)

PHONE NO. (303) 289-4827

INDICATE ANY SIGNIFICANT DISCREPANCIES BETWEEN MANIFEST AND SHIPMENT:

21 HANDLING OR DISPOSAL METHOD:

☐ Recycling for Customer

☐ Recycling

☐ Disposal

WASTE IS HELD FOR DELIVERY ELSEWHERE, SPECIFY THE DESIGNATED TSD FACILITY:

Designated TSD Facility Name

EPA NO.

Please print or type. (Form designed for use on nine (12-inch) typewriter.)

Sent 10/24/84

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. C 0 0 0 7 8 3 4 3 4 0 7 1 2 5 2 8 7	Manifest Document No. 2 5 2 8 7	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.	
3. Generator's Name and Mailing Address Rockwell International, Kocky Flats Plant PO Box 464, Colmen, CO 80401				A. State Manifest Document Number 84125287		
4. Generator's Phone (303) 497-2377				B. State Generator's ID		
5. Transporter 1 Company Name Oil & Solvent Process Company				C. State Transporter's ID		
6. US EPA ID Number C 0 0 0 9 8 0 5 9 1 1 8 4				D. Transporter's Phone (303) 289-4827		
7. Transporter 2 Company Name				E. State Transporter's ID		
8. US EPA ID Number				F. Transporter's Phone		
9. Designated Facility Name and Site Address Oil & Solvent Process Company 9131 E. 96th Avenue Henderson, CO 80640				G. State Facility's ID		
10. US EPA ID Number C 0 0 9 8 0 5 9 1 1 8 4				H. Facility's Phone (303) 289-4827		
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers		13. Total Quantity	14. Unit (M/Vol)	15. Waste No.
a. Waste Trichloroethylene, ORM-A, UN1710 (54731) 11228		No. Type		50	C	
b. Trichloroethylene, 100%; pH = 6.4						
c.						
d.						
16. Special Handling Instructions and Additional Information				K. Handling Codes for Wastes Listed Above		
Bungs and rings tight; drums not leaking; gloves, goggles and respirator.						
18. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.						
Printed/Typed Name Delores M. Krieg, Traffic Manager				Signature <i>Delores M. Krieg</i>		Date Month Day Year 10/24/84
17. Transporter 1 Acknowledgement of Receipt of Materials				Signature <i>John Wiley</i>		Date Month Day Year 11/24/84
Printed/Typed Name John Wiley				Signature <i>John Wiley</i>		Date Month Day Year 11/24/84
18. Transporter 2 Acknowledgement of Receipt of Materials				Signature		Date Month Day Year
Printed/Typed Name				Signature		Date Month Day Year
19. Discrepancy Indication Space None						
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.						
Printed/Typed Name John Wiley				Signature <i>John Wiley</i>		Date Month Day Year 11/24/84

Yellow: TSDF SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS

ROCKWELL INTERNATIONAL
ENERGY SYSTEMS GROUP
P.O. BOX 464
GOLDEN, COLORADO 80401

ANALYTICAL REPORT

GENERAL LABORATORY
BUILDING 881

DISTRIBUTION:

/L. R. Quintana 551
F. P. Vigil 881
P. A. Hyman 881
File

LAB NUMBER: M84-1112

DATE: 5/17/84

ACCOUNT NO: 382-901577-02

APPROVED: B. A. Medeiros
B. A. Medeiros

SAMPLE DESCRIPTION

Trichloroethylene Alk-Tri
Confirm chemical composition and determine total alpha, so that barrel
in warehouse can be properly disposed.

ANALYSIS RESULTS

Total Alpha (Radio Chemistry)

Sample was found to have a total alpha of 9.4×10^1 pCi/L.

Composition (determined by infrared spectroscopy)

Trichloroethylene (solvent) (major)

The composition of this sample does not vary significantly from Dow IR Spectra of
Gases and Vapor Grating Spectra Vol II #103.

IR File No. 8498

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address		C 0 0 0 7 8 3 4 3 4 0 7		A. Date Manifest Document Numbered NOV 30 1984	
Rockwell International, Rocky Flats Plant PO Box 464, Golden, CO 80401				B. Date Generator's ID Number Issued	
4. Generator's Phone (303) 497-2377				C. Date Generator's ID Number Renewed	
5. Transporter 1 Company Name		6. US EPA ID Number		D. Date Transporter's ID Number Issued	
Oil & Solvent Process Company		C 0 0 9 8 0 5 9 1 1 8 4		E. Date Transporter's ID Number Renewed	
7. Transporter 2 Company Name		8. US EPA ID Number		F. Date Transporter's ID Number Issued	
				G. Date Transporter's ID Number Renewed	
9. Designated Facility Name and Site Address		10. US EPA ID Number		H. Date Facility's ID Number Issued	
Oil & Solvent Process Company 9131 E. 96th Avenue Henderson, CO 80640		E 0 0 9 8 0 5 9 1 1 8 4		I. Date Facility's ID Number Renewed	
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers		13. Total Quantity	14. Unit
a. Waste Combustible Liquid, n.o.s., (NA1993)		No. Type			
D001 2673				350	G
b. Waste Paint Related Material, Flammable Liquid, NA1263		D001 (26148)		133	G
c. a. Petroleum distillate, 50%; Non-hazardous Material, 50%; pH = 7					
db. Fluorocarbons - 7%; Aromatics - 15%; Aliphatics - 12%; Ketones - 65%; Alcohols - 8%; pH = 6.8 - 9					
15. Special Handling Instructions and Additional Information					
Bungs and rings tight; drums not leaking; gloves and goggles.					
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.					
17. Transporter 1 Acknowledgement of Receipt of Materials		Signature		Date	
Printed/Typed Name		Signature		Month Day Year	
Delores M. Krier, Traffic Manager		[Signature]		NOV 30 1984	
18. Transporter 2 Acknowledgement of Receipt of Materials		Signature		Date	
Printed/Typed Name		Signature		Month Day Year	
Jan Wicky		[Signature]		NOV 30 1984	
19. Discrepancy Indication, Spec		Signature		Date	
None		[Signature]		NOV 30 1984	
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 18.					
Printed/Typed Name		Signature		Date	
Janine Ballard		[Signature]		NOV 30 1984	

Yellow: TSDP SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS

(41)

GENERATOR

24 JULY

(C8)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. C 0 7 8 9 0 0 1 0 5 2 6	Manifest Document No. 12512	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address Rockwell International, Rocky Flats Plant PO Box 404, Golden, CO 80402-0404		4. Generator's Phone (303) 966-2377		5. Manifest Document Number	
6. Transporter 1 Company Name OIL & SOLVENT PROCESS COMPANY		8. US EPA ID Number C 0 0 9 8 0 5 9 1 1 8 4		9. Transporter 1 Phone	
7. Transporter 2 Company Name		8. US EPA ID Number		9. Transporter 2 Phone	
9. Designated Facility Name and Site Address OIL & SOLVENT PROCESS COMPANY 9131 EAST 96TH AVENUE HENDERSON, CO 80640		10. US EPA ID Number C 0 0 9 8 0 5 9 1 1 8 4		11. Facility's Phone (303) 288-4827	
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers No. Type	13. Total Quantity	14. Unit M/V/L	15. Waste No.
a. WASTE HAZARDOUS LIQUID, H.C.S., ORANGE, NAILING		1 T T	1500		DC01 F002 F003
b.					
c.					
d. Chlorinated = Less than 5% Ketones = Less than 5% Aliphatic = Less than 5%					
16. Special Handling Instructions and Additional Information Gloves and goggles required. Use grounding device while loading and unloading		17. Handling Codes for Wastes Listed Above			
18. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.		19. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 18.			
Printed/Typed Name Delores M. Kring, Traffic Manager		Signature Delores M. Kring		Date Month Day Year 0 1 1 1	
17. Transporter 1 Acknowledgement of Receipt of Materials		Signature Randy D. Brown		Date Month Day Year 10 8 1985	
18. Transporter 2 Acknowledgement of Receipt of Materials		Signature		Date Month Day Year	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 18.		Signature Carla Bum		Date Month Day Year 10 8 1985	

Please print or type. (Form designed for use on 6 1/2 x 11 inch typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

C 0 7 8 8 0 0 1 0 5 7 6

Manifest
Document No.

12513

2. Page 1
of 1

Information in the shaded areas
is not required by Federal
law.

3. Generator's Name and Mailing Address
Rockwell International, Rocky Flats Plant
PO Box 464, Golden, CO 80402-0464

4. Generator's Phone (303) 906-2377

5. Transporter 1 Company Name

US EPA ID Number

OIL & SOLVENT PROCESS COMPANY

C 0 0 9 8 0 5 9 1 1 8 4

7. Transporter 2 Company Name

US EPA ID Number

8. Designated Facility Name and Site Address

US EPA ID Number

OIL & SOLVENT PROCESS COMPANY

9131 EAST 96TH AVENUE

HENDERSON, CO 80640

C 0 0 9 8 0 5 9 1 1 8 4

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

12. Containers

No. Type

13. Total
Quantity

14. Unit
Wt/Lb

WASTE PAINT RELATED MATERIAL,
FLAMMABLE LIQUID, NA1263.

C 0 5 0 M 0 0 2 5 0 G

d. Fluorocarbons 7%
Aromatics 15%
Aliphatics 12%

15. Special Handling Instructions and Additional Information

Gloves and goggles required;
bungs tight, drums not leaking.

BL# 78610

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described
above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for
transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name

Deborah M. Krieg, Traffic Manager

Signature

Deborah M. Krieg

Date

Month Day Year
08 28 85

17. Transporter 1 Acknowledgment of Receipt of Materials

Printed/Typed Name

Ronald W. Heaton

Signature

Ronald W. Heaton

Date

Month Day Year
08 29 85

18. Transporter 2 Acknowledgment of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in
Item 19.

Printed/Typed Name

Carla Gurn

Signature

Carla Gurn

Date

Month Day Year
08 29 85

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

C 0 7 8 9 0 0 1 0 5 2 6

Manifest Document No.

11433

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address

Rockwell International, Rocky Flats Plant
PO Box 464, Golden, CO 80402-0464

4. Generator's Phone (303) 966-2377

5. Transporter 1 Company Name

OIL & SOLVENT PROCESS COMPANY

6. US EPA ID Number

C 0 0 9 8 0 5 9 1 1 8 4

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address

OIL & SOLVENT PROCESS COMPANY
9131 EAST 96TH AVENUE
HENDERSON, CO 80640

10. US EPA ID Number

C 0 0 9 8 0 5 9 1 1 8 4

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)

a. WASTE ACETONE, FLAMMABLE LIQUID, UN1090

12. Containers

No. Type

20 11 0 0 5 0 M 0 0 5 0 0 0

13. Total Quantity

11 50

14. Unit

G

15. Special Handling Instructions and Additional Information

Gloves and goggles required;
bungs tight, drums not leaking.

RET 78611

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name

Delores M. Krieg, Traffic Manager

Signature

Delores M. Krieg

Date

Month Day Year
0 8 2 8 88

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

RONALD W. BECHTOLD

Signature

Ronald W. Bechtold

Date

Month Day Year
0 8 2 9 85

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name

Carla Gum

Signature

Carla Gum

Date

Month Day Year
0 8 2 9 85

(31)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document No.

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address

Rockwell International, Rocky Flats Plant
PO Box 464, Golden, CO 80402-0464

4. Generator's Phone (303) 966-2377

5. Transporter 1 Company Name

OIL & SOLVENT PROCESS COMPANY

6. US EPA ID Number

C-0-0-9-8-0-5-9-1-1-8-4

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address

OIL & SOLVENT PROCESS COMPANY
9131 EAST 96TH AVENUE
HENDERSON, CO 80640

10. US EPA ID Number

C-0-0-9-8-0-5-9-1-1-8-4

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

WASTE ALCOHOL, D.P.S., FLAMMABLE LIQUID, UN1987

12. Containers

No. Type

13. Total Quantity

14. Unit

0 0 3 0 4

0 0 1 5 0

G

15. Special Handling Instructions and Additional Information

Gloves and goggles required;
bungs tight, drums not leaking.

DOT 28612

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this manifest are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name

Delores M. Kries, Traffic Manager

Signature

Delores M. Kries

Date

Month Day Year

0 8 2 8 8

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Raymond W. Brown

Signature

Raymond W. Brown

Date

Month Day Year

0 8 2 8 8

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name

Carla Gunn

Signature

Carla Gunn

Date

Month Day Year

10 0 1 2 9 1 9 5

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.
C07-8-9-0-0-1-0-5-2-6

Manifest Document No.
11435

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address

Rockwell International, Rocky Flats Plant
PO Box 464, Golden, CO 80402-0464

4. Generator's Phone (303) 966-2377

5. Transporter 1 Company Name

OIL & SOLVENT PROCESS COMPANY

6. US EPA ID Number

E-0-0-9-8-0-5-9-1-1-8-4

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address

OIL & SOLVENT PROCESS COMPANY
9131 EAST 96TH AVENUE
HENDERSON, CO 80640

10. US EPA ID Number

E-0-0-9-8-0-5-9-1-1-8-4

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

HAZARDOUS WASTE, LIQUID, N.O.S.,
ORM-E, NA9189

12. Containers

No. Type

13. Total Quantity

14. Unit

15. Unit

16. Unit

17. Unit

18. Unit

19. Unit

20. Unit

21. Unit

22. Unit

23. Unit

24. Unit

25. Unit

26. Unit

27. Unit

28. Unit

29. Unit

30. Unit

31. Unit

32. Unit

33. Unit

34. Unit

35. Unit

36. Unit

37. Unit

38. Unit

39. Unit

40. Unit

41. Unit

42. Unit

43. Unit

44. Unit

45. Unit

46. Unit

47. Unit

48. Unit

49. Unit

50. Unit

51. Unit

52. Unit

53. Unit

54. Unit

55. Unit

56. Unit

57. Unit

58. Unit

59. Unit

60. Unit

61. Unit

62. Unit

63. Unit

64. Unit

65. Unit

66. Unit

67. Unit

15. Special Handling Instructions and Additional Information

Gloves and goggles required;
bungs tight, drums not leaking.

PC# 28613

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name

Delores M. Krieg, Traffic Manager

Signature

Delores M. Krieg

Date

Month Day Year
0-8-2-8-8-5

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Ronald W. Berman

Signature

Ronald W. Berman

Date

Month Day Year
0-9-2-8-8-5

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name

Carla Guin

Signature

Carla Guin

Date

Month Day Year
10-8-2-8-8-5

D-48 6022 A (7/84)
(EPA 6700-02)

white copy: TSDP retains

yellow copy: Transporter retains

pink copy: TSDP sends to generator

gold copy: Generator retains

01 02541

(33)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. C 0 7 8 9 0 0 1 0 5 2		Manifest Document No. 11436	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address Rockwell International, Rocky Flats Plant PO Box 464, Golden, CO 80402-0464						
4. Generator's Phone (303) 966-2377				5. US EPA ID Number		
6. Transporter 1 Company Name OIL & SOLVENT PROCESS COMPANY				E 0 0 9 8 0 5 9 1 1 8 4		
7. Transporter 2 Company Name				US EPA ID Number		
8. Designated Facility Name and Site Address OIL & SOLVENT PROCESS COMPANY 9131 EAST 96TH AVENUE HENDERSON, CO 80640				10. US EPA ID Number E 0 0 9 8 0 5 9 1 1 8 4		
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)						
a. WASTE-FLAMMABLE LIQUID, N.O.S. FLAMMABLE LIQUID, UN1993				12. Containers No.	13. Total Quantity	14. Unit M/G
				0 0 2 0 M	0 0 1 0 0	G
15. Special Handling Instructions and Additional Information Gloves and goggles required; bungs tight, drums not leaking. BCH 28614						
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.						
Printed/Typed Name Dolores M. Krieg, Traffic Manager				Signature <i>Dolores M. Krieg</i>		Date Month Day Year 0 6 2 8 8 5
17. Transporter 1 Acknowledgment of Receipt of Materials Printed/Typed Name <i>Ronald J. [illegible]</i>				Signature <i>Ronald J. [illegible]</i>		Date Month Day Year 0 6 2 8 8 5
18. Transporter 2 Acknowledgment of Receipt of Materials Printed/Typed Name				Signature		Date Month Day Year
19. Discrepancy Indication Space						
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19. Printed/Typed Name <i>Carla Gum</i>						
Signature <i>Carla Gum</i>				Date Month Day Year 0 6 2 8 8 5		

DHS 8022-A (7/84)
(EPA 8700-02)

white copy: TSDP retains
pink copy: TSDP sends to generator
yellow copy: transporter retains
gold copy: Generator retains

(34)

Please print or type. (Form designed for use on 4110 (12-pitch) typewriter.)

**UNIFORM HAZARDOUS
WASTE MANIFEST**

1. Generator's US EPA ID No.

C-0-7-8-9-0-0-1-0-2-2-8

Manifest Document No.

11437

2. Page 1

of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address:

Rockwell International, Rocky Flats Plant
PO Box 464, Golden, CO 80402-0464

4. Generator's Phone (303) 966-2377

5. Transporter 1 Company Name

OIL & SOLVENT PROCESS COMPANY

6. US EPA ID Number

E-0-0-9-8-0-5-9-1-1-8-4

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address

OIL & SOLVENT PROCESS COMPANY
9131 EAST 96TH AVENUE
HENDERSON, CO 80640

10. US EPA ID Number

E-0-0-9-8-0-5-9-1-1-8-4

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

a. WASTE PAINT, FLAMMABLE LIQUID, UN1263

12. Containers

No. Type

12 12

0 1 0 8

0 0 5 0 0 0

0 0 5 0 0 0

0 0 5 0 0 0

0 0 5 0 0 0

0 0 5 0 0 0

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0 0 5 0 0 0

0 0 5 0 0 0

0 0 5 0 0 0

16. Special Handling Instructions and Additional Information

Gloves and goggles required;
bungs tight, drums not leaking.

DOT 28615

17. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this certification are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name

Delores M. Krieg, Traffic Manager

Signature

Delores M. Krieg

Date

Month Day Year

10 12 88

17. Transporter 1 Acknowledgment of Receipt of Materials

Printed/Typed Name

Franklin E. Brown

Signature

Franklin E. Brown

Date

Month Day Year

10 12 88

18. Transporter 2 Acknowledgment of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name

Carla Guon

Signature

Carla Guon

Date

Month Day Year

10 12 91 85

DHS 5022 A (7/84)
(EPA 8700-22)

white copy: TSDP retains

yellow copy: Transporter retains

pink copy: TSDP sends to generator

gold copy: Generator retains

04 0001

Please print or type. (Form designed for use on other (12-inch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

C 0 7 8 9 0 0 1 0 2 2 6

Manifest Document No.

11433

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address

Rockwell International, Rocky Flats Plant
PO Box 484, Golden, CO 80402-0484

4. Generator's Phone (503)

966-2377

5. Transporter 1 Company Name

OIL & SOLVENT PROCESS COMPANY

6. US EPA ID Number

C 0 0 9 8 0 5 9 1 1 8 4

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Mailing Address

OIL & SOLVENT PROCESS COMPANY
9131 EAST 96TH AVENUE
HENDERSON, CO 80640

10. US EPA ID Number

C 0 0 9 8 0 5 9 1 1 8 4

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

a. WASTE ACETONE, FLAMMABLE LIQUID, UN1090

12. Containers
No. Type

13. Quantity
15.5 ET
16.0 G

15. Special Handling Instructions and Additional Information

Gloves and goggles required;
bungs tight, drums not leaking.

ECT 78611

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name

Delores M. Krieg, Traffic Manager

Signature

Delores M. Krieg

Date

Month Day Year
0 8 | 2 8 | 88

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

RONALD W. BERNARD

Signature

Ronald W. Bernard

Date

Month Day Year
0 8 | 2 9 | 85

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name

Carla Gum

Signature

Carla Gum

Date

Month Day Year
0 8 | 2 9 | 85

Please print or type. (Form designed for use on either (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No. C 0 7 8 9 0 0 1 0 5 7	Mandate Document No. 11434	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address Rockwell International, Rocky Flats Plant PO Box 464, Golden, CO 80402-0464 Generator's Phone (303) 966-2377					
4. Transporter 1 Company Name OIL & SOLVENT PROCESS COMPANY	6. US EPA ID Number C 0 0 9 8 0 5 9 1 1 8 4				
7. Transporter 2 Company Name	8. US EPA ID Number				
9. Designated Facility Name and Site Address OIL & SOLVENT PROCESS COMPANY 9131 EAST 96TH AVENUE HENDERSON, CO 80640	10. US EPA ID Number C 0 0 9 8 0 5 9 1 1 8 4				
11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers No. Type	13. Total Quantity	14. Unit M/A/yr	15. Waste ID
a. WASTE ALCOHOL, D.P.S., FLAMMABLE LIQUID, UN1987		0 0 3 0	0 0 1 5 0	G	FOOD
b.					
c.					
d.					
16. Special Handling Instructions and Additional Information Gloves and goggles required; bungs tight, drums not leaking. DPT 28612					
17. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packaged, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.					
Printed/Typed Name Dolores M. Krieg, Traffic Manager		Signature <i>Dolores Krieg</i>		Date Month Day Year 0 8 2 8 5	
17. Transporter 1 Acknowledgement of Receipt of Materials		Signature <i>Robert E. Brown</i>		Date Month Day Year 0 8 2 8 5	
18. Transporter 2 Acknowledgement or Receipt of Materials		Signature		Date Month Day Year	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.					
Printed/Typed Name Celia Gum		Signature <i>Celia Gum</i>		Date Month Day Year 0 8 2 8 5	

white copy: TSDP retains
yellow copy: Transporter retains

pink copy: TSDP sends to generator
gold copy: Generator retains

01 0001

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

C07-8-9-0-0-1-0-5-2-6

Manifest Document No.

11435

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

Generator's Name and Mailing Address

Rockwell International, Rocky Flats Plant
PO Box 464, Golden, CO 80402-0464

4. Generator's Phone (303) 966-2377

5. Transporter 1 Company Name

OIL & SOLVENT PROCESS COMPANY

6. US EPA ID Number

E-0-0-9-8-0-5-9-1-1-8-4

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address

OIL & SOLVENT PROCESS COMPANY
9131 EAST 96TH AVENUE
HENDERSON, CO 80640

10. US EPA ID Number

E-0-0-9-8-0-5-9-1-1-8-4

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)

a. HAZARDOUS WASTE, LIQUID, n.o.s.,
ORM-E, NA9189

12. Containers
No. Type

232 008 D M

13. Total Quantity

70.00

14. Unit

6

d. Alcohols 8%
Ketones 65%
Aliphatics 12%

15. Special Handling Instructions and Additional Information

Gloves and goggles required;
bungs tight, drums not leaking.

PC# 28613

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name

Delores M. Krieg, Traffic Manager

Signature

Delores M. Krieg

Date

Month Day Year
10-8-1985

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

RANDY W. BARNES

Signature

Randy W. Barnes

Date

Month Day Year
10-12-1985

18. Transporter 2 Acknowledgement or Receipt of Materials

Printed/Typed Name

Signature

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 18.

Printed/Typed Name

Carla Gum

Signature

Carla Gum

Date

Month Day Year
10-12-1985

88022 A (7/84)
A 8700-221

white copy: TSDP retains

yellow copy: Transporter retains

pink copy: TSDP sends to generator

gold copy: Generator retains

04 00041

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

C 0 7 8 9 0 0 1 0 5 2 6

Manifest
Document No.

12513

2. Page 1
of 1

Information in the shaded areas
is not required by Federal
law.

3. Generator's Name and Mailing Address
Rockwell International, Rocky Flats Plant
PO Box 464, Golden, CO 80402-0464

4. Generator's Phone (303) 966-2377

5. Transporter 1 Company Name
OIL & SOLVENT PROCESS COMPANY

6. US EPA ID Number

E 0 0 9 8 0 5 9 1 1 8 4

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address

OIL & SOLVENT PROCESS COMPANY
9131 EAST 96TH AVENUE
HENDERSON, CO 80640

10. US EPA ID Number

E 0 0 9 8 0 5 9 1 1 8 4

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)

WASTE PAINT RELATED MATERIAL,
FLAMMABLE LIQUID, NA1263.

12. Containers

No. Type

13. Total
Quantity

14. Unit
Measures

0 0 5 0 M

0 0 2 5 0 G

G

d. Fluorocarbons 7%
Aromatics 15%
Aliphatics 12%

15. Special Handling Instructions and Additional Information

Gloves and goggles required;
bungs tight, drums not leaking.

BL# 78610

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described
above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for
transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name

Delores M. Krieg, Traffic Manager

Signature

Delores M. Krieg

Date

Month Day Year
0 8 1 2 8 8 5

17. Transporter 1 Acknowledgment of Receipt of Materials

Printed/Typed Name

Richard L. Brennan

Signature

Richard L. Brennan

Date

Month Day Year
0 8 1 2 9 8 5

18. Transporter 2 Acknowledgment of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in
item 19.

Printed/Typed Name

Carla Gum

Signature

Carla Gum

Date

Month Day Year
0 8 2 9 8 5

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address: Rockwell International, Rocky Flats Plant PO Box 464, Golden, CO 80402-0464		C-0-7-8-9-0-0-1-0-9-2-4		11437	
4. Generator's Phone (303) 966-2377		5. US EPA ID Number			
6. Transporter 1 Company Name OIL & SOLVENT PROCESS COMPANY		C-0-0-9-8-0-5-9-1-1-8-4			
7. Transporter 2 Company Name		8. US EPA ID Number			
9. Designated Facility Name and Site Address OIL & SOLVENT PROCESS COMPANY 9131 EAST 96TH AVENUE HENDERSON, CO 80640		10. US EPA ID Number C-0-0-9-8-0-5-9-1-1-8-4			
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)		12. Containers		13. Total Quantity	
a. WASTE PAINT, FLAMMABLE LIQUID, UN1263		No. Type		Unit	
		100 12 DM		100 12 DM	
b.					
c.					
d.					
14. Special Handling Instructions and Additional Information gloves and goggles required; bungs tight, drums not leaking. DOT 28615					
15. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.					
Printed/Typed Name Delores M. Krieg, Traffic Manager		Signature <i>Delores M. Krieg</i>		Date Month Day Year 08 28 85	
17. Transporter 1 Acknowledgment of Receipt of Materials		Signature <i>Paul H. Hansen</i>		Date Month Day Year 08 28 85	
18. Transporter 2 Acknowledgment of Receipt of Materials		Signature		Date	
19. Discrepancy Indication Space					
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 18.					
Printed/Typed Name Cork Guon		Signature <i>Cork Guon</i>		Date Month Day Year 08 29 85	

OMB 8022-A (7/84)
(EPA 8700-02)

white copy: TSDP retains
yellow copy: Transporter retains

pink copy: TSDP sends to generator
gold copy: Generator retains

20 00541

Please print or type. (Form designed for use on nine (12-inch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

C 0 7 8 9 0 0 1 0 5 2 6

Manifest
Document No.

11436

2. Page 1
of 1

Information in the shaded area
is not required by Federal
law.

3. Generator's Name and Mailing Address

Rockwell International, Rocky Flats Plant
PO Box 464, Golden, CO 80402-0464

4. Generator's Phone (303) 966-2377

5. Transporter 1 Company Name

OIL & SOLVENT PROCESS COMPANY

6. US EPA ID Number

C 0 0 9 8 0 5 9 1 1 8 4

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address

OIL & SOLVENT PROCESS COMPANY
9131 EAST 96TH AVENUE
HENDERSON, CO 80640

10. US EPA ID Number

C 0 0 9 8 0 5 9 1 1 8 4

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID Number)

a. WASTE FLAMMABLE LIQUID, R.C.D.
FLAMMABLE LIQUID, UN1993

12. Containers

No. Type

0 0 2 D M

13. Total
Quantity

0 0 1 0 0

14. Unit
M/A

G

15. Special Handling Instructions and Additional Information

Gloves and goggles required;
bungs tight, drums not leaking.

BCH 28614

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described
above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for
transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name

Delores M. Krieger, Traffic Manager

Signature

Delores M. Krieger

Date

Month Day Year
0 8 1 2 8 8 5

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

Ronald J. [illegible]

Signature

Ronald J. [illegible]

Date

Month Day Year
0 8 2 8 8 5

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Signature

Date

Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in
Item 19.

Printed/Typed Name

Carla Gunn

Signature

Carla Gunn

Date

Month Day Year
10 8 2 9 8 5



Rockwell International

Atomics International Division
Rocky Flats Plant
P.O. Box 484
Golden, Colorado 80401

ANALYTICAL REPORT

PLANT SUPPORT LABORATORY

To	R. L. Riegel	Account No.	Date	8-8-80	Lab. No.	580.679
	R. E. Leitner			226-952108-02		
	V. H. Matzick		Reported by	<i>J. A. Zalikowski</i>		
	J. L. Briggs			J. A. Zalikowski		
	M. J. Rea		Approved	<i>R. S. Cichosz</i>		
	File			R. S. Cichosz		

Sample Description

Dapcoat 1001 Chemical Process Coating, Aircraft Products Co., 1191 Hawk Circle, Anaheim, Ca. 92807. Identification and comparison to "Organoceram" as possible replacement.

Analysis Results

COMPOSITION

Solvent System: toluene
methanol
short chain hydrocarbon ($\sim C_7$)

Resin System: styrene-butadiene (major)
coumarone-indene (tackifier)(minor)
hydrated mineral magnesium silicate (filler)

CONCLUSION

This product differs from the previously used "organoceram" only in the organic solvent system. The resin system of the two coatings are quite similar. This coating appears to be an acceptable substitute for "organoceram".

Rockwell International

Rocky Flats Plant
Energy Systems Group
P.O. Box 484
Golden, Colorado 80401

REACTIVE CHEMICAL HAZARD DATA

REPORT NUMBER _____

DATE OF ISSUE 8-7-80

PREPARED BY J.A. ZALIKOWSKI

MATERIAL NAME

DAPCOAT 1001 / Chemical Process Coatings

SYNONYMS

PHYSICAL STATE

Opaque, green
viscous liquid

MANUFACTURER NAME AND ADDRESS

Aircraft Products Co., 1141 Hawk Circle, Anaheim, CA. 92807

STRUCTURAL FORMULA, COMPOSITION, COMPONENTS, IMPURITIES

Solvents: toluene
methyl alcohol (methanol)
short chain hydrocarbon

Resin: butadiene - styrene
coumarone - indene
hydrated mineral magnesium silicate (47kr)

LABORATORY SCREENING TESTS

Differential Thermal Analysis

Drop-Weight Shock Sensitivity

Flammability Properties

Flash Point: 50 °C (°F)

Fire Point: 102 °C (°F)

Comments: solvents are flammable

HAZARDOUS MATERIALS RATING (ROCKY FLATS PLANT HAZARDOUS MATERIALS MANUAL ENTRY) (Special Precautions, Warnings, Handling Instructions, Comments)

HEALTH - 2

FLAMMABILITY - 3

REACTIVITY - .

Contains toluene, methanol, short chain hydrocarbon (possibly heptane), styrene-butadiene copolymer resin, coumarone-indene resin, and a hydrated mineral magnesium silicate. The solvents are flammable and pose a dangerous fire risk. Solvents are toxic by ingestion, inhalation, and skin absorption.

NAME OF ORIGINATOR OF MATERIAL

R.L. Riegel

DEPARTMENT

Coatings

ACCOUNT

22695410802

BUILDING

444

EXTENSION

4007



Rockwell International

Atomics International Division
Rocky Flats Plant
P.O. Box 484
Golden, Colorado 80401

ANALYTICAL REPORT

PLANT SUPPORT LABORATORY

To R. L. Riegel V. H. Matzick M. J. Rea ✓ File	Account No. 319-901577-02	Date 11/5/80	Lab. No. 580.937
		Reported by D. M. MELTON D. M. Melton	
		Approved R. S. Cichow R. S. Cichow	

Sample Description

Dapcoat #1001 Additive, 5 gallon can, Aircraft Product Co. P.O. CCP-19749-B, lot #0-294, RIRS #20990. Analyze and compare to 580.679.

Analysis Results

COMPOSITION:

Solvent system: toluene (major)
methanol (major)
aromatic hydrocarbons (minor)
aliphatic hydrocarbons (minor)

Resin system:* coumarone-indene resin (tackifier) (major)
styrene-butadiene resin (minor)
hydrated mineral magnesium silicate (filler) (major)

*Note: The respective amounts of coumarone-indene resin to the styrene-butadiene resin had been increased considerably. However, from a phone conversation (11/5/80) with R.L. Riegel, it was learned that this material is an additive package of Dapcoat #1001, for a 55-gallon-drum sample of Dapcoat #1001 which is lacking in the amount of tackifying agent (coumarone-indene resin). Therefore, this compositional change should not affect the requirements of Dapcoat #1001 due to the nature of its use.

IR No. 80-635



Rockwell International

Energy Systems Group
Rocky Flats Plant
P.O. Box 484
Golden, Colorado 80401

ANALYTICAL REPORT

To	J. Hayden 374 ✓ R.F. Hessick 551 D.F. Hornbacher 123 L. DiGiallencardo 123 File	Account No.	389- 115-900814	Date	8-14-81	Lab. No.	M81-1458
				Reported by			
				Approved	<u>L.D. Johnson</u> L.D. Johnson		

Sample Description

Dapcoat 1001 Composite Samples

Analysis Results

	<u>Total Alpha(dml)</u>	<u>Be mg/g</u>
444 Bldg.	320 ± 312	<.1
Warehouse	103 ± 268	<.1

Hayden Account No. 339 Date 9/14/82 Lab. No. M82-1691

file

cc: P.A. Hyman

Reported by

P.A. Hyman

Approved

D.I. Hunter

Sample Description

Liquid waste samples: 26 suspected carbon tetrachloride waste solvents for identification; 3 trichloroethane solvents for gamma scan; two oil samples for gamma scan.

Analysis Results

INFRARED SPECTROSCOPY

All 26 samples were examined by vapor and liquid phase infrared spectroscopy in order to characterize the major liquid constituents. No attempt was made to identify any solids (dissolved or not), nor any trace level impurities. When a sample exhibited two distinct immiscible layers, an aliquot from each layer was analyzed. Results are summarized in the following table:

<u>Sample No.</u>	<u>Physical Description</u>	<u>Composition</u>
1 ^a	single layer; clear yellow-orange liquid; fine undissolved rust-colored solids	water (major) carbon tetrachloride, 1,1,1-trichloroethane, and chloroform, all in trace amounts
2	single layer; clear colorless liquid; fine undissolved rust-colored solids	water (major) no trace solvents detected
3	2 layers; top layer is opaque light brown; bottom layer is clear, yellow liquid with some undissolved solids	top layer: water (approximately 2 ml) bottom layer: carbon tetrachloride (approximately 110 ml)
4	2 layers: top is cloudy yellow-orange liquid; bottom is cloudy brown liquid with undissolved solids.	top layer: water (major) (approx. 70 ml) bottom layer: carbon tetrachloride (major) chloroform (minor) unidentified oils and surfactants (minor) (approx. 30 ml)

Sample
No.

Physical
Description

Composition

5b	2 layers: top is clear yellow liquid; bottom is clear yellow liquid; fine undissolved solids at liquid/liquid boundary	top layer: water (approx. 20 ml) bottom layer: carbon tetrachloride unidentified oils and surfactants (approx. 80 ml) Carbon dioxide and carbon monoxide gases were also detected in the vapor phase of the sample.
6a,b	single layer; clear light orange liquid; fine rust-colored undissolved solids.	water (major) carbon tetrachloride, chloroform, 1,1,1-trichloroethane, perchloroethylene and carbon dioxide all detected in trace amounts in the vapor phase.
7	single layer; clear colorless liquid; trace of undissolved solids	water (major) no carbon tetrachloride detected
8a,b	single layer; clear light yellow liquid; trace of fine, rust-colored undissolved solids	water (major) carbon tetrachloride, chloroform, 1,1,1-trichloroethane, perchloroethylene, and CO ₂ all detected in trace amounts in vapor phase.
9a	single layer; clear colorless liquid; trace undissolved solids	water (major) trace only carbon tetrachloride
10a,b	single layer; clear light orange liquid; fine, rust-colored undissolved solids	water (major) carbon tetrachloride, chloroform, perchloroethylene, and carbon dioxide all detected in trace amounts in vapor phase.
11	2 layers: top layer is clear yellow liquid; bottom layer is clear amber liquid; contains variety of undissolved solids	top layer: water (approx. 70 ml) bottom layer: carbon tetrachloride chloroform unidentified oils and surfactants (approx. 30 ml total)
12b	2 layers: top is clear liquid; bottom is clear brown liquid, contains a variety of undissolved solids	top layer: water (approx. 110 ml) bottom layer: carbon tetrachloride (approx. 1 ml) Carbon dioxide and carbon monoxide were also detected in the vapor phase.
13b,c	2 layers: top is opaque brown liquid; bottom is clear, colorless liquid; contains variety of undissolved solids	top layer: paraffinic base mineral oil trace carbon tetrachloride and chloroform (approx. 10 ml total) bottom layer: water (approx. 100 ml) Carbon dioxide was also detected in the vapor phase.

<u>Sample No.</u>	<u>Physical Description</u>	<u>Composition</u>
14	single layer; clear colorless liquid; trace undissolved solids	carbon tetrachloride (major) paraffinic base mineral oil (minor) trace moisture on walls of bottle and surface of solvent
15a,b	single layer; cloudy, colorless liquid; trace undissolved solids	water (major) carbon tetrachloride and CO ₂ detected in trace amounts in vapor phase
16a,b	single layer; clear colorless liquid; trace undissolved solids	water (major) carbon tetrachloride and CO ₂ detected in trace amounts in vapor phase
17a,b	single layer; clear yellow liquid; fine undissolved solids	water (major) carbon tetrachloride, chloroform, CO ₂ , and carbon monoxide detected in trace amounts in vapor phase
18a,b	single layer; clear colorless liquid; fine undissolved solids	water (major) carbon tetrachloride and CO ₂ detected in trace amounts in vapor phase
19a,b	single layer; clear yellow liquid; fine undissolved solids	water (major) carbon tetrachloride, CO ₂ , and carbon monoxide detected in trace amounts in vapor phase
20	single layer; clear light green liquid	water (major) no solvents detected by ir
21a,b	single layer; clear yellow liquid; undissolved solids	water (major) carbon tetrachloride, chloroform, 1,1,1-trichloroethane, perchloroethylene, CO ₂ , and carbon monoxide all detected in trace amounts in vapor phase
22b,c	two layers: top is opaque light brown; bottom is clear, colorless liquid; fine undissolved solids in both layers	top layer: paraffinic base mineral oil (major) carbon tetrachloride (minor) chloroform (minor) (approx. ½ ml total) bottom layer: water (approx. 110 ml total) CCl ₄ , CO ₂ , and chloroform all detected in vapor phase

23 ^b	2 layers: top layer is opaque brown; bottom is clear, light brown liquid; some undissolved solids	top layer: water (approx. 15 ml) bottom layer: carbon tetrachloride (major) paraffinic base oil (minor) chloroform (minor) (approx. 110 ml total) CO ₂ and carbon monoxide also detected in vapor phase
24 ^{a,b}	single layer; clear yellow liquid; fine undissolved solids	water (major) carbon tetrachloride, perchloroethylene, chloroform, CO ₂ , and carbon monoxide all detected in trace amounts in vapor phase
25 ^{a,b}	single layer; clear colorless liquid; fine undissolved solids	water (major) carbon tetrachloride and CO ₂ detected in trace amounts in vapor phase
26	2 layers: top is clear, colorless liquid; bottom is clear, colorless liquid	top layer: water (approx. 1 ml) bottom layer: carbon tetrachloride (major) paraffinic base oil (minor) (approx. 45 ml)

NOTES:

- a. Carbon tetrachloride, chloroform, perchloroethylene, and 1,1,1-trichloroethane are all insoluble in water. When mixed with water these chlorinated solvents will form a separate layer immiscible with water. In these 2-layer systems the chlorinated solvents will occupy the bottom layer as they are all denser than water. Although essentially insoluble, depending upon the pH of the water and the presence of surfactants, these chlorinated solvents can dissolve in water to the extent of a few hundred ppm. This slight solubility accounts for their detection in the essentially aqueous samples analyzed.
- b. In several of the samples submitted, carbon dioxide and carbon monoxide were detected in the vapor phase. This is indicative of organic decomposition reactions as well as of microorganism activity.
- c. Two samples were identified as a combination of an oil layer and a water layer. In these cases, carbon tetrachloride was detected dissolved in the oil layer.

IR File No. 7765

The following samples are essentially water only (no significant carbon tetrachloride detected): 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 24, and 25

Samples nos. 13 and 22 are two layer systems containing essentially water and oil.

The remaining samples contain significant measurable amounts of carbon tetrachloride.

*Re Fill
with bottoms
from other drums.*

Rockwell International

Energy Systems Group
Rocky Flats Plant
P.O. Box 484
Golden, Colorado 80401

ANALYTICAL REPORT

To	J. Hayden Waste Operations Bldg. 374	Account No.		Date	9/15/82	Lab. No.	
				Reported by	R. C. Young		
				Approved	<i>R.C. Young</i> J. M. West		

Sample Description
Carbon test composite
Sample date, 8/1/82
Results in pCi/ml

Analysis Results		
SAMPLE I.D.	VOL./WT.	COUNT TIME
D23905	3 ml	79458 sec.
TH-232 DECAY DAUGHTER		
BI-212	1.0E0±1.6E-1	
Pb-212	1.1E0±1.6E-1	
TH-228	1.0E0±1.6E-1	

ROCKWELL INTERNATIONAL
ENERGY SYSTEMS GROUP
P.O. BOX 464
GOLDEN, COLORADO 80401

ANALYTICAL REPORT

GENERAL LABORATORY
BUILDING 881

DISTRIBUTION:

✓ J. A. Hayden, Waste Oper 374
D. D. Hornbacker, Env & Occ Health
File

LAB NUMBER: M85-0822

DATE: 5-17-85

ACCOUNT NO: 389

ANALYSIS BY: R. M. Leitner and
B. A. Medeiros

APPROVED: B.A. Medeiros
B. A. Medeiros

SAMPLE DESCRIPTION

Twenty-eight waste material found outside of S & W Warehouse and PU & D yard.
Identify waste material, determine PCB content, flash point and presence of
any chlorinated solvents.

ANALYSIS RESULTS

Infrared Spectroscopy

Sample ID

Components

PU & D C-1 (# 15)

- Oil *
- A volatile hydrocarbon solvent
(e.g., mineral spirits: aliphatic
naphtha)
- carbon dioxide (minor)
- water (major) (bottom layer) pH=9

PU & D C-2 (# 21)

- oil *
- carbon dioxide (minor)
- methyl alcohol (minor)

PU & D C-3 (# 27)

- oil *
- carbon dioxide (minor)

PU & D C-4 (# 8)

- oil *
- silicone lubricant (minor)
- water (major) (bottom layer) pH=6

PU & D C-5 (# 14)

- oil *
- silicone lubricant (minor)
- carbon dioxide (minor)

PU & D C-6 (# 6)

- oil *
- carbon dioxide (minor)
- Freon (minor)
- water (major) (bottom layer) pH=7

ANALYTICAL REPORT

M85-0822

Date: 5-17-85

<u>Sample ID</u>	<u>Components</u>
PU & D C-7 (# 12)	<ul style="list-style-type: none">- oil *- silicone lubricant (minor)- carbon dioxide (minor)- water (major) (bottom layer) pH=7
PU & D C-8 (# 5)	<ul style="list-style-type: none">- oil *- silicone lubricant (minor)- carbon dioxide (major)- methyl alcohol (minor)- xylenes (minor)- water (major) (bottom layer) pH=6
PU & D C-9 (# 11)	<ul style="list-style-type: none">- oil *- Freon TF (major)- carbon dioxide (minor)- water (major) (bottom layer) pH=7
PU & D C-10 (# 17)	<ul style="list-style-type: none">- oil *- silicone lubricant (minor)- carbon dioxide (minor)- water (major) (bottom layer) pH=6
PU & D C-11 (#23)	<ul style="list-style-type: none">- oil *- Freon TF (major)- carbon dioxide (minor)- water (major) (bottom layer) pH=7
PU & D C-12 (# 1)	<ul style="list-style-type: none">- silicone lubricant (major)- oil *- carbon dioxide- Freon TF (minor)- water (major) (bottom layer) pH=7
2x (# 20)	<ul style="list-style-type: none">- oil *
3 (# 26)	<ul style="list-style-type: none">- water (major) pH=8- xylenes (minor)- possibly styrene/butadiene copolymer (minor)- possibly polyethylene glycol (major)
7 (# 13)	<ul style="list-style-type: none">- oil *- Freon TF (major)- xylenes (major)

ANALYTICAL REPORT

M85-0822

Date: 5-17-85

<u>Sample ID</u>	<u>Components</u>
11 (# 7)	- oil *
	- carbon dioxide (minor)
	- water (major) (bottom layer) pH=7
37 (# 18)	- oil *
	- Freon TF (major)
	- 1,1,1 - trichloroethane (major)
	- water (major) (top layer) pH=3
41 (# 19)	- oil *
	- carbon dioxide
67 (#24)	- oil *
	- carbon dioxide (minor)
98 (# 25)	- water (major) pH=4
	- carbon dioxide (minor)
	- 1,1,1 - trichloroethane (minor)
85091.1 --> 85091.4 (# 4)	- acetone (major)
	- carbon tetrachloride (minor)
85092.1 --> 85092.5 (# 2)	- ethanol (major)
	- acetone (major)
	- carbon tetrachloride (minor)
	- oil * (very minor)
85056.1 --> 85056.2 --> 85002 (#3)	- oil *
	- Freon TF (major)
S & W oil -3- (# 9)	- oil **
S & W Texaco oil (# 22)	- oil **
S & W Brake fluid (# 28)	- glycol ether/borate base brake fluid
Texaco Merops & Thurban (# 10)	- oil *
Zep Dyna-Sol -2- (# 16)	- oil *
	- xylenes (major)
	- Freon TF (minor)

** Oil (e.g., mix of paraffinic and naphthinic base mineral oil)

* Oil (e.g., paraffinic base mineral oil).

ANALYTICAL REPORT

M85-0822

Date: 5-17-85

All the PU & D samples except PU & D C-4, contain a significant amount of carbon dioxide.

IR FILE # 8859

Emission Spectroscopy

NOTE: The numbers in the parentheses are those numbers used in the emission spectrographic results.

Flash points were determined by Pensky-Martens closed tester ASTM method D93-73. Results are recorded in °C. PCB results are also reported below. For the PCB analysis samples were diluted with hexane and run on the Gas Chromatograph. PCB results are reported in parts per million total PCB's.

<u>Sample</u>	<u>Flash Point (°C)</u>	<u>PCB (ppm)</u>
PU&D C-1	24.0	<6.22
PU&D C-2	27.0	<6.00
PU&D C-3	24.0	<6.23
PU&D C-4	29.0	<6.04
PU&D C-5	24.0	<6.02
PU&D C-6	38.0	<50
PU&D C-7	21.0	<6.20
PU&D C-8	17.0	<6.22
PU&D C-9	19.0	<6.03
PU&D C-10	21.0	<6.08
PU&D C-11	<75.0	<6.10
PU&D C-12	26.0	<6.18
2X	53.0	<6.14
3	43.0	<6.36
7	25.0	<6.38
11	37.0	<34.48
37	<11.0	<5.75
41	>75.0	<6.09
67	35.0	<37.0
98	21.0	<6.17
85091.1 --> 85091.4	-9.4°C (based on acetone)	<6.04
85092.1 --> 85092.5	12.7°C	<5.78
85056.1 --> 85056.2 --> 85002	not flammable	<4.98
S & W oil -5-	65.0	<6.15
S & W Texaco oil	58.0	<6.03
S & W Brake fluid	73.0	<6.14
Texaco Meropa & Thurban	>75.0	<50.0
Zep Dyna-sol -2-	39.0	<6.34

IR FILE # 8859

Lab. Number: M85-0822

ELEMENT	SAMPLE ID					
	1	2	3	4	5	6
Al	10	<1.0	<1.0	<1.0	35	10
B	20	<5.0	<5.0	<5.0	80	<5.0
Be	<.10	<.10	<.10	<.10	<.10	<.10
Ca	90	<1.0	<1.0	<1.0	250	85
Cd	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Co	<10	<10	<10	<10	<10	<10
Cr	1.0	<1.0	<1.0	<1.0	<1.0	3.0
Cu	3.0	<1.0	<1.0	<1.0	2.0	3.0
Fe	60	<10	<10	<10	125	35
K	15	<10	<10	<10	20	25
Li	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Mg	9.0	<1.0	<1.0	<1.0	23	23
Mn	<10	<10	<10	<10	<10	<10
Mo	<10	<10	<10	<10	<10	<10
Na	60	<16	<16	<16	40	50
Ni	1.0	<1.0	<1.0	<1.0	<1.0	4.0
Pb	1.0	<1.0	<1.0	<1.0	7.0	4.0
Si	120	1.0	<1.0	1.0	130	10
Sn	<10	<10	<10	<10	<10	<10
V	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Zn	25	<10	<10	<10	15	10

ELEMENT	SAMPLE ID					
	7	8	9	10	11	12
Al	3.0	60	2.0	<1.0	3.0	60
B	<5.0	60	<5.0	<5.0	15	30
Be	<.10	<.10	<.10	<.10	<.10	.10
Ca	60	400	200	4.0	70	500
Cd	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Co	<10	<10	<10	<10	<10	<10
Cr	1.0	2.0	<1.0	<1.0	2.0	4.0
Cu	<1.0	6.0	<1.0	<1.0	1.0	10
Fe	20	100	<10	<10	25	170
K	50	10	<10	<10	60	<10
Li	<1.0	<1.0	<1.0	<1.0	3.0	<1.0
Mg	20	70	<1.0	<1.0	15	40
Mn	<10	<10	<10	<10	<10	<10
Mo	<10	<10	<10	<10	<10	<10
Na	70	50	<16	<16	80	16
Ni	<1.0	<1.0	<1.0	<1.0	<1.0	2.0
Pb	1.0	35	25	<1.0	2.0	50
Si	6.0	130	2.0	2.0	11	130
Sn	<10	<10	<10	<10	<10	<10
V	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Zn	<10	125	50	<10	<10	120

Additional results on following page(s)

EMISSION SPECTROGRAPHIC LABORATORY RESULTSPage No. 2Lab. Number: M85-0822

<u>ELEMENT</u>	<u>SAMPLE ID</u>	
	13	14
Al	<1.0	18
B	<5.0	110
Be	.10	<1.0
Ca	3.0	500
Cd	<5.0	<5.0
Co	<10	<10
Cr	<1.0	3.0
Cu	<1.0	8.0
Fe	<10	100
K	<10	<10
Li	<1.0	<1.0
Mg	1.0	100
Mn	<10	<10
Mo	<10	<10
Na	<16	45
Ni	<1.0	<1.0
Pb	<1.0	80
Si	7.0	45
Sn	<10	<10
V	<1.0	<1.0
Zn	<10	180

These results were determined by semiquantitative emission spectroscopy;
relative error is expected to be fifty percent.
All results are reported in grams/ml

Plate No. 2982

EMISSION SPECTROGRAPHIC LABORATORY RESULTS

Page No. 3

Lab. Number: M85-822

ELEMENT	SAMPLE ID					
	15	16	17	18	19	20
Al	25	<1.0	100	25	2.0	4.0
B	150	<5.0	25	5.0	<5.0	10
Be	<.10	<.10	.50	<.10	<.10	<.10
Ca	>500	2.0	225	45	3.0	25
Cd	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Co	<10	<10	<10	<10	<10	<10
Cr	4.0	<1.0	6.0	5.0	<1.0	<1.0
Cu	10	<1.0	20	23	<1.0	23
Fe	100	<10	200	>500	<10	23
K	10	<10	25	<10	<10	10
Li	<1.0	<1.0	<1.0	1.0	<1.0	<1.0
Mg	70	<1.0	45	7.0	1.0	4.0
Mn	<10	<10	<10	<10	<10	<10
Mo	<10	<10	<10	<10	<10	<10
Na	70	<16	60	30	<16	60
Ni	<1.0	<1.0	3.0	10	<1.0	<1.0
Pb	130	<1.0	160	4.0	<1.0	3.0
Si	45	3.0	300	00	9.0	13
Sn	<10	<10	<10	<10	<10	<10
V	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Zn	215	<10	130	15	<10	70

ELEMENT	SAMPLE ID					
	21	22	23	24	25	26
Al	20	3.0	110	3.0	<1.0	3.0
B	125	<5.0	13	<5.0	<5.0	>5000
Be	<.10	<.10	<.10	<.10	<.10	<.10
Ca	>500	2.0	250	35	2.0	13
Cd	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Co	<10	<10	<10	<10	<10	<10
Cr	3.0	<1.0	7.0	<1.0	<1.0	<1.0
Cu	9.0	<1.0	20	<1.0	<1.0	<1.0
Fe	65	<10	225	30	>5000	15
K	45	<10	25	45	<10	20
Li	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Mg	90	<1.0	40	8.0	<1.0	2.0
Mn	<10	<10	<10	<10	300	<10
Mo	15	<10	<10	<10	13	<10
Na	80	<16	60	80	<16	>820
Ni	<1.0	<1.0	2.0	<1.0	7.0	<1.0
Pb	70	<1.0	200	3.0	3.0	<1.0
Si	10	3.0	250	12	2.0	10
Sn	<10	<10	<10	<10	<10	<10
V	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Zn	175	<10	130	<10	<10	<10

Additional results on following page(s)

EMISSION SPECTROGRAPHIC LABORATORY RESULTSPage No. 4Lab. Number: M85-822

<u>ELEMENT</u>	<u>SAMPLE ID</u>	
	27	28
Al	18	2.0
B	80	500
Be	<.10	.20
Ca	>500	4.0
Cd	<5.0	<5.0
Co	<10	<10
Cr	3.0	<1.0
Cu	7.0	<1.0
Fe	60	<10
K	35	<10
Li	<1.0	<1.0
Mg	100	<1.0
Mn	<10	<10
Mo	<10	<10
Na	55	160
Ni	<1.0	<1.0
Pb	110	15
Si	20	3.0
Sn	<10	<10
V	<1.0	<1.0
Zn	175	<10

These results were determined by semiquantitative emission spectroscopy;
relative error is expected to be fifty percent.
All results are reported in µgrams/ml

Plate No. 2987

Internal Letter



Rockwell International

Date April 9, 1985

No.

TO (Name, Organization, Internal Address)

FROM (Name, Organization, Internal Address, Phone)

J. A. Hayden
Waste Operations
Bldg. 374

R. C. Young
Rad. Measurements
Bldg. 123
7425

SUBJECT:

Results of gamma scan of waste oil samples dated 3/22/85 in
pCi/l.

<u>Sample</u>	<u>Radionuclides</u>
SGS OIL 1	less than background
2	Bi212 - 49.0
3	less than background
4	less than background
5	Pb212 - 28.3
6	Pb212 - 20.4, Th234 - 30.7
7	less than background
8	Pb212 - 16.4
9	less than background
10	Pb212 - 2.9
11	less than background
12	Pb212 - 6.5
13	Th234 - 4560
14	less than background
15	Pb212 - 26.4
16	less than background
17	less than background
18	Bi212 - 39.1, Pb212 - 40.5
19	Pb212 - 51.4
20	Bi212 - 49.6
21	Pb212 - 43.2
22	Th234 - 547
23	less than background
24	less than background
25	Pb212 - 14.4
26	less than background
27	Pb212 - 12.2
28	Pb212 - 18.5


R. C. Young
Radiation Measurements

CC:
J. M. Aldrich
W. F. Williams

Generator Of Waste (Must be filled in by producer) **No 15348**

NAME Rockwell International - Rocky Flats Plant

EPA PERMIT NO. _____

PICK UP ADDRESS Rocky Flats, CO
NUMBER STREET CITY

PHONE NO. 497-7000 P.O. NO. _____

ORDER PLACED BY _____ DATE _____

TYPE OF PROCESS Machining Operations
WHICH PRODUCED WASTES and Garage CODE NO. 2992

Description Of Waste (Must be filled in by producer)

- ☒ OIL, gals. 1340 ☐ TANK BOTTOM SEDIMENT, gals.
☐ OTHER, gals. ☐ SOLVENT, gals.

This waste is described to the best of my ability and it was delivered to a licensed Liquid Waste hauler. There are no PCB in this product.

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Delores M. Krieg
Delores M. Krieg, Traffic Manager
SIGNATURE OF AUTHORIZED AGENT AND TITLE

Transportator, Storer and Treator of Waste

NAME Approved Drain Oil Service/Milt Adams, Inc.
EPA Permit No. COD-060627262
5390 E. 72nd Avenue, Commerce City, CO 80022
Phone 303/287-2807

PICKUP DATE 10/20/82 TIME 12:00 p.m.

VEHICLE UNIT NO. _____

- ☒ Oil Gals. 1340 \$ 201.00 ☐ Tank Bottom Sed. \$ _____
☐ Solvent Gals. \$ _____ ☐ Other \$ _____

THE DESCRIBED WASTE was handled by me, the treatment facility named above, and was accepted.

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

TERRY M. BULL
SIGNATURE OF AUTHORIZED AGENT

WHITE-Office

CANAL...dilling

PINK-Acknowledgement

GOLD-Generator's Copy

**Rockwell International**

Energy Systems Group
Rocky Flats Plant
P.O. Box 464
Golden, Colorado 80401

ANALYTICAL REPORT

To J. Hayden	Account No.	Date 9/9/82	Lab. No.
		Reported by R. C. Young	
		Approved J. M. West	

Sample Description

Sample collected on 7/1/82

Reported in pCi/g

Analysis Results

SAMPLE I.D.	NAME	WT., VOL.	COUNT TIME
D21605	Waste 011 2B	2cc	58438 sec.

U-238 DECAY DAUGHTER

RA-226 8.7E-1±4.3E-1

TH-232 DECAY DAUGHTER

BI-212	1.7E0±2.8E-1
PB-212	1.8E0±2.9E-1
TH-228	1.7E0±2.8E-1



Rockwell International

Energy Systems Group
Rocky Flats Plant
P.O. Box 464
Garden, Colorado 80401

ANALYTICAL REPORT

To John Hayden	Account No.	Date 9/9/82	Lab. No.
Reported by R. C. Young		Approved J. M. West	

Sample Description

Sample collected on 7/1/82

Reported in pCi/g

Analysis Results

SAMPLE I.D.	NAME	WT,VOL.	COUNT TIME
D21407	Waste Oil #18	2cc	227111 sec.

I-238 DECAY DAUGHTER

I-214	$1.0E0 \pm 2.3E-1$
I-226	$1.1E0 \pm 2.3E-1$

TH-232 DECAY DAUGHTER

BI-212	$2.1E0 \pm 2.1E-1$
PB-212	$2.2E0 \pm 2.2E-1$
TH-228	$2.1E0 \pm 2.1E-1$

1382

8

E.P.A. MANIFEST RECORD

Generator Of Waste (Must be filled in by producer) **No 15343**

NAME Lockwell International - Rocky Flats Plant

EPA PERMIT NO. _____

PICK UP ADDRESS Rocky Flats, CO

NUMBER

STREET

CITY

PHONE NO. 477-7000

P.O. NO. _____

ORDER PLACED BY _____ DATE _____

TYPE OF PROCESS Machining Operations

WHICH PRODUCED WASTES and Garage CODE NO. 2772

Description Of Waste (Must be filled in by producer)

☒ OIL, gals.

☐ TANK BOTTOM SEDIMENT, gals.

☐ OTHER, gals.

☐ SOLVENT, gals.

This waste is described to the best of my ability and it was delivered to a licensed Liquid Waste hauler. There are no PCB in this product.

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

Delores M. Krieg
Delores M. Krieg, Traffic Manager

SIGNATURE OF AUTHORIZED AGENT AND TITLE

Transportator, Storer and Treator of Waste

NAME Approved Drain Oil Service/Milt Adams, Inc.

EPA Permit No. COD-060627262

5390 E. 72nd Avenue, Commerce City, CO 80022

Phone 303/287-2807

PICKUP DATE 10/19/62 TIME 3:00 p.m.

VEHICLE UNIT NO. 96

☒ Oil Gals. _____ \$ _____ ☐ Tank Bottom Sed. _____ \$ _____

☐ Solvent Gals. _____ \$ _____ ☐ Other _____ \$ _____

THE DESCRIBED WASTE was handled by me, the treatment facility named above, and was accepted.

I certify (or declare) under penalty of perjury that the foregoing is true and correct.

[Signature]
SIGNATURE OF AUTHORIZED AGENT

WHITE-Office

CANARY-Billing

PINK-Acknowledgement

GOLD-Generator's Copy

**Rockwell International**

Energy Systems Group
Rocky Flats Plant
P.O. Box 464
Golden, Colorado 80401

ANALYTICAL REPORT

To John Hayden	Account No.	Date 9/9/82	Lab. No.
		Reported by R. C. Young	
		Approved J. M. West	

Sample Description

Sample collected on 7/1/82

Reported in pCi/g

Analysis Results

SAMPLE I.D.	NAME	WT., VOL.	COUNT TIME
D20707	Waste Oil #2	2cc	025621

U-238 DECAY DAUGHTER

PB-214	1.1E0±1.9E-1
RA-226	1.0E0±2.3E-1

TH-232 DECAY DAUGHTER

BI-212	1.9E0±2.0E-1
PB-212	2.0E0±2.1E-1
TH-228	1.9E0±2.0E-1



Rockwell International

Energy Systems Group
Rocky Flats Plant
P.O. Box 484
Golden, Colorado 80401

ANALYTICAL REPORT

To John Hayden	Account No.	Date 9/9/82	Lab. No.
		Reported by R. C. Young	
		Approved J. M. West	

Sample Description

Sample collected on 7/1/82

Reported in pCi/g

Analysis Results

SAMPLE I.D.	NAME	WT., VOL.	COUNT TIME
D20906	Waste 011 #2A	2.0cc	57230 sec.

²³⁸ DECAY DAUGHTER

PB-214	7.6E-1±3.3E-1
RA-226	1.2E+0±4.7E-1

TH-232 DECAY DAUGHTER

BI-212	1.5E+0±2.5E-1
PB-212	1.5E+0±2.5E-1
TH-228	1.4E+0±2.5E-1

EASTMAN KODAK COMPANY
APPROVED BY U.S. DEPARTMENT OF LABOR
"ESSENTIALLY SIMILAR" TO FORM OSHA-20



ECF 2079-1F (6-79)

MATERIAL SAFETY DATA SHEET *Revised 12-4-84*

SECTION I

PRODUCT NAME: KODAFLEX® DOP Plasticizer (150 gal) (123 L) SIZE: Not applicable.
CHEMICAL NAME: Dioctyl Phthalate [Bis(2-ethylhexyl) Phthalate], 4028 CAS No. 117-81-7
FORMULA: $C_{26}H_{44}(COOCH_2CH(C_2H_5)(C_6H_{13}))_2$
MANUFACTURER: Marketed by Eastman Chemical Products, Inc.
ADDRESS: Kingsport, Tennessee 37662
FOR INFORMATION ON HEALTH HAZARDS CALL: Monday thru Friday, 8 a.m.-5 p.m. (Eastern), (615) 247-0411, Ext. 3613;
all other times (615) 247-0411, Ext. 4666
FOR OTHER INFORMATION CALL: Same number as above Extension 2978 INFORMATION EFFECTIVE AS OF: January, 1980

SECTION II HAZARDOUS INGREDIENTS OF MIXTURES

PRINCIPAL HAZARDOUS COMPONENT (S)	%	TLV (Units)
Not applicable.		

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	724°F (384°C)	SPECIFIC GRAVITY (H ₂ O = 1)	0.985 @ 20°/20°C
VAPOR PRESSURE (mm Hg.)	1.2 @ 200°C	PERCENT VOLATILE BY VOLUME (%)	Not applicable.
VAPOR DENSITY (AIR = 1)	13.5	EVAPORATION RATE (— = 1)	Not applicable.
SOLUBILITY IN WATER	Negligible.		
APPEARANCE AND ODOR	Clear liquid, little or no odor.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	420°F (216°C) COC	FLAMMABLE LIMITS	LeI	Uel
			0.28%	Not determined.
EXTINGUISHING MEDIA	Dry Chemical, Water Spray, Carbon Dioxide			
SPECIAL FIRE FIGHTING PROCEDURES	Wear self-contained breathing apparatus and protective clothing to prevent contact with skin or eyes.			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None known to Eastman.			

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SECTION V. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE 5 mg/m³ (A.C.G.I.H., 1979)

EFFECTS OF OVEREXPOSURE

None expected.

EMERGENCY AND FIRST AID PROCEDURES

None should be needed.

SECTION VI REACTIVITY DATA

STABILITY	UNSTABLE	CONDITIONS TO AVOID
	STABLE	

X Not applicable.

INCOMPATIBILITY (Materials to avoid) Oxidizing materials can cause a vigorous reaction.

HAZARDOUS DECOMPOSITION PRODUCTS As with any other organic material, combustion will produce carbon dioxide and probably carbon monoxide.

HAZARDOUS POLYMERIZATION		CONDITIONS TO AVOID
May Occur	Will Not Occur	

X Not applicable.

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN
IF CASE MATERIAL IS
RELEASED OR SPILLED

Eliminate ignition sources. Flush spill away with water spray.
Small spills may be collected with absorbent material.

WASTE DISPOSAL METHOD

Incineration.
Observe all Federal, state, and local laws concerning health and environment.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) An appropriate NIOSH-approved respirator for mists and/or organic vapor should be worn if needed.

VENTILATION	LOCAL EXHAUST	If needed to control vapor at elevated temperatures	SPECIAL	None known to Eastman.
	MECHANICAL (general)	Recommended.	OTHER	None known to Eastman.

PROTECTIVE GLOVES None should be needed. EYE PROTECTION Safety glasses should be worn in any type of industrial operation.

OTHER PROTECTIVE EQUIPMENT None should be needed.

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING No special precautions known to Eastman.

OTHER PRECAUTIONS No eye hazard known to Eastman; however, any material gotten into the eye should be washed out immediately and medical attention obtained if symptoms persist after washing. Appropriate ventilation may be necessary at operations with elevated temperatures or where mists or aerosols are encountered. Maintain workroom air concentration below the specified TLV (see Section V).

The information contained herein is furnished without warranty of any kind. Employees should use this information only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use of these materials and the safety and health of employees.

EASTMAN KODAK COMPANY
APPROVED BY U.S. DEPARTMENT OF LABOR
"ESSENTIALLY SIMILAR" TO FORM OSHA-20



ECP 2079-1F (8-79)

MATERIAL SAFETY DATA SHEET *Revised 12-4-84*

SECTION I

PRODUCT NAME: KODAFLEX® DOP Plasticizer (150 gal)(123 cti) SIZE: Not applicable.
CHEMICAL NAME: Dioctyl Phthalate [Bis(2-ethylhexyl) Phthalate], 4028 CAS No. 117-81-7
FORMULA: $C_{26}H_{44}(COOCH_2CH(C_2H_5)C_6H_5)_2$
MANUFACTURER: Marketed by Eastman Chemical Products, Inc.
ADDRESS: Kingsport, Tennessee 37662
FOR INFORMATION ON HEALTH HAZARDS CALL: Monday thru Friday, 8 a.m.-5 p.m. (Eastern), (615) 247-0411, Ext. 3613;
all other times (615) 247-0411, Ext. 4666
FOR OTHER INFORMATION CALL: Same number as above Extension 2978 INFORMATION EFFECTIVE AS OF: January, 1980

SECTION II HAZARDOUS INGREDIENTS OF MIXTURES

PRINCIPAL HAZARDOUS COMPONENT (S)	%	TLV (Units)
Not applicable.		

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	724°F (384°C)	SPECIFIC GRAVITY (H ₂ O = 1)	0.985 @ 20°/20°C
VAPOR PRESSURE (mm Hg.)	1.2 @ 200°C	PERCENT VOLATILE BY VOLUME (%)	Not applicable.
VAPOR DENSITY (AIR = 1)	13.5	EVAPORATION RATE (- - - = 1)	Not applicable.
SOLUBILITY IN WATER	Negligible.		
APPEARANCE AND ODOR	Clear liquid, little or no odor.		

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	420°F (216°C) COC	FLAMMABLE LIMITS	Lel	Uel
			0.28%	Not determined.
EXTINGUISHING MEDIA	Dry Chemical, Water Spray, Carbon Dioxide		@ 474°F (264°C)	
SPECIAL FIRE FIGHTING PROCEDURES	Wear self-contained breathing apparatus and protective clothing to prevent contact with skin or eyes.			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None known to Eastman.			

For **KODAFLEX® DOP PLASTICIZER [BIS(2-ETHYLHEXYL)PHTHALATE]**
(PM 401)

SPECIFICATION NO. 3507-9	
PAGES	EFFECTIVE DATE
3	November 1979

Received 12-4-84

A. GENERAL

- A-1. This specification describes a grade of Kodaflex® DOP Plasticizer [bis(2-ethylhexyl) phthalate] which must meet all of the requirements listed below when tested as directed on the following pages.
- A-2. See attached Material Safety Data Sheet No. 6106 for safety precautions for Kodaflex® DOP Plasticizer.

B. PROPERTIES

- | | |
|---|------------------------------------|
| B-1. <u>Color (Platinum-Cobalt Scale)</u> | 25 maximum |
| B-2. <u>Specific Gravity at 20°/20°C</u> | 0.9840 - 0.9860 |
| B-3. <u>Acidity, as Phthalic Acid</u> | 0.01% maximum |
| B-4. <u>Ester, as Bis(2-Ethylhexyl) Phthalate</u> | 99.0% minimum |
| B-5. <u>Heat Test Color (Platinum-Cobalt Scale)</u> | 50 maximum |
| B-6. <u>Odor</u> | Essentially odorless |
| B-7. <u>Appearance</u> | Free from insoluble matter or haze |

C. SAMPLING

- C-1. Use clean, dry, narrow-mouth glass-stoppered bottles or clean, dry, narrow-mouth screw-cap bottles with aluminum foil-lined caps. Do not allow rubber or any other contaminating material to come in contact with the sample.
- C-2. From each manufactured lot of material drummed, prepare a composite sample of not less than one pint. Sample at least 10% of the drums or three drums, whichever is greater; if the lot consists of three or fewer drums, sample each drum. Withdraw the sample from the center of each drum by means of a "thief" or other sampling device. Prepare the composite by mixing equal volumes from each drum sampled.
- C-3. From tank car or other large vessel, obtain a representative one-pint sample in the following manner. Place the sample bottle in a clean, stainless steel bottle holder and rinse the bottle with the material to be sampled. Then lower the unstoppered bottle to the bottom of the vessel and immediately withdraw to the surface. Maintain a uniform speed in lowering and raising such that the bottle is filled to approximately the bottom of the concave portion of the bottle as it reaches the surface of the liquid. If the vessel contains more than one compartment, prepare a composite sample by mixing approximately proportional volumes from each compartment.

For reasons of safety and accuracy, the person performing methods described herein must be thoroughly trained and under the supervision of a professional person who is knowledgeable in the relevant sciences. Equipment and materials described should be used in accordance with safety procedures recommended by their manufacturers.



Eastman Chemical Products, Inc.
Kingsport, Tennessee 37662

Specification 3507-9

D. METHODS OF TESTING (Numbers correspond to those in Section B)

D-1. Color (Platinum-Cobalt Scale)

Determine the color of the sample as directed in ASTM Designation: D 1209-69, "Method of Test for Color of Clear Liquids (Platinum-Cobalt Scale)."

D-2. Specific Gravity at 20°/20°C

Determine the specific gravity of the sample as directed in ASTM Designation: D 891-59, "Methods of Test for Specific Gravity of Industrial Aromatic Hydrocarbons and Related Materials," Method C, "Specific Gravity by Means of a Pycnometer."

D-3. Acidity, as Phthalic Acid

Determine the acidity of the sample as directed in Tennessee Eastman Company Analytical Method TEAD-A-AN-G-VA-14-2, "Total Acidity."

D-4. Ester, as Bis(2-Ethylhexyl) Phthalate

Determine the ester content of the sample as directed in Tennessee Eastman Company Analytical Method TEAD-A-AN-G-VA-85-1, "Determination of Percent Ester in Plasticizers."

D-5. Heat Test Color (Platinum-Cobalt Scale)

Determine the heat test color of the sample as directed in Tennessee Eastman Company Analytical Method TEAD-A-AN-G-VCC-15-2, "Heat Test Color."

D-6. Odor

Remove the sample bottle cap and smell the sample in the bottle. Report as "essentially odorless" if no significant odor is detected. Report as "odor present" if easily perceptible odor is found.

D-7. Appearance

Determine the presence or absence of any haze or insoluble matter by visual inspection of the sample.

E. PACKAGING

- E-1. The material will be supplied in steel drums, tank cars, or tank trucks in such a manner as to ensure acceptance by common or other carriers and to comply with United States Department of Transportation (DOT) and tariff requirements and specifications for safe transportation at the lowest applicable rate to the point of delivery.

F. MARKING

- F-1. Each container shall be marked to show the manufacturer's name and product identification, the lot number (if applicable), and net weight.
- F-2. The material shall be marked, certified, labeled and described as required by DOT regulations and any additional properly authorized regulations not inconsistent therewith.

APPENDIX: TEAD-A-AN-G-VA-14-2
TEAD-A-AN-G-VA-85-1
TEAD-A-AN-G-VCC-15-2
Material Safety Data Sheet No. 6106, "Kodaflex® DOP Plasticizer"



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APPENDIX C-2

EPA CRITERIA FOR IDENTIFYING A HAZARDOUS WASTE



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EPA CRITERIA FOR IDENTIFYING A HAZARDOUS WASTE

The criteria which a generator must use to establish whether or not his waste is hazardous were published 19 May 1980 in 40 CFR, Part 261, Subpart B, revised as of 1 July 1984 (CDH Regulation 100.41). For a complete discussion of the criteria, the reader should consult the CFR or Colorado Hazardous Waste Regulation referenced above. Briefly, the EPA considers a waste having one or more of the following characteristics to be a hazardous waste: ignitable, corrosive, reactive, or toxic. These characteristics are defined by the EPA as follows:

§ 261.21 Characteristics of ignitability.

(a) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(1) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume, and has a flash point less than 60°C (140°F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79, or a Setaflash Closed Cup Tester, using the test method specified in ASTM standard D-3278-78, or as determined by an equivalent test method approved by the Administrator under the procedures set forth in §§260.20 and 260.21.

(2) It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture, or spontaneous chemical changes, and when ignited, burns so vigorously and persistently that it creates a hazard.



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(3) It is an ignitable compressed gas as defined in 49 CFR 173.300 and as determined by the test methods described in that regulation or equivalent test methods approved by the Administrator under §§260.20 and 260.21.

(4) It is an oxidizer as defined in 49 CFR 173.151.

(5) A solid waste that exhibits the characteristics of ignitability, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D001.

of corrosivity.

(a) A solid waste exhibits the characteristic of corrosivity is a representative sample of the waste has either of the following properties:

(1) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either the test method specified in the "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (also described in "Methods for Analysis of Water and Wastes" EPA 600/4-79-020, March 1979), or an equivalent test method approved by the Administrator under the procedures set forth in §§260.20 and 260.21.

(2) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55°C (130°F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 as standardized in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods," or an equivalent test method approved by the Administrator under the procedures set forth in §§260.20 and 260.21.

(b) A solid waste that exhibits the characteristics of corrosivity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D002.



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#261.23 of reactivity.

(a) A solid waste exhibits the characteristic of reactivity is a representative sample of the waste has any of the following properties:

(1) It is normally unstable and readily undergoes violent change without detonating.

(2) It reacts violently with water.

(3) It forms potentially explosive mixtures with water.

(4) When mixed with water, it generates toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.

(5) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.

(6) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

(7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

(8) It is a forbidden explosive as defined in 49 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53, or a Class B explosive as defined in 49 CFR 173.88.

(b) A solid waste that exhibits the characteristics of reactivity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D003.

#261.24 Characteristic of Extraction Procedure (EP) Toxicity



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(a) A solid waste exhibits the characteristic of EP toxicity if, using the test methods described in Appendix II or equivalent methods approved by the Administrator under the procedures set forth in §§260.20 and 260.21, the extract from a representative sample of the waste contains any of the contaminants listed in Table I at a concentration equal to or greater than the respective value given in that Table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering, is considered to be the extract for the purposes of this section.

(b) A solid waste that exhibits the characteristic of EP toxicity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number specified in Table I (below) which corresponds to the toxic contaminant causing it to be hazardous.

TABLE I—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR CHARACTERISTIC OF EP TOXICITY

EPA hazardous waste number	Contaminant	Maximum concentration (milligrams per liter)
D004	Arsenic	5.0
D005	Berium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Enthal (1,2,3,4,10,10-hexachloro-1,7-epoxy-1,4,4a,8,8,7,8,8a-octahydro-1,4-endo, endo-5,8-dimethano-naphthalene)	0.02
D013	Endrine (1,2,3,4,5,6-hexachlorocyclopentadiene, gamma isomer)	0.4
D014	Methoxychlor (1,1,1-Trichloro-2,2-bis (p-methoxyphenyl)ethane)	10.0
D015	Toxaphene (C ₁₂ H ₈ Cl ₆ , Technical chlorinated camphene, 67-69 percent chlorine)	0.5
D016	2,4-D, (2,4-Dichlorophenoxyacetic acid)	10.0
D017	2,4,5-TP Silver (2,4,5-Trichlorophenoxypropionic acid)	1.0



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APPENDIX D.1

DRUM DISPOSAL PROCEDURES

5928A



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PROCEDURE FOR DISPOSAL OF EMPTY DRUMS (GENERATOR)

1. All drums that are marked "DEPOSIT. RETURN TO BLDG. 551 WHEN EMPTY" are to be sent to PU&D for return to the original vendor. Drums with this marking are not to be used for any other purpose.
2. Drums sent to Building 774 for processing may be disposed of, when empty, by following the procedure in paragraph 3 or by returning them to the generator for reuse. Every empty drum shipped from Building 774 must have an "ON-SITE USE ONLY" label affixed to the top of the drum.
3. For all drums not covered by paragraphs 1 or 2, the following procedure is to be used:
 - 3.1 Obtain a Waste Processing Request Form (RF-46367) from the warehouse.
 - 3.2 Fill out the top portion of the form. Include a description of the material formerly held in the drum.
 - 3.3 Have Radiation Monitoring survey the drum and provide the required data and signature on the form.



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- 3.4 Send the completed form to the appropriate department (Waste Operations, Building T668 for radioactive waste, or to Environmental Control, Building T452B for nonradioactive waste).
- 3.5 Retain control of the empty drum until a copy of the form is returned to you with directions regarding where to send the drum.
- 3.6 Send the empty drum to the location specified on the returned form.

PROCEDURE FOR DISPOSAL OF EMPTY DRUMS (ENVIRONMENTAL CONTROL AND WASTE OPERATIONS)

1. EVALUATE HAZARD CATEGORY

- 1.1 NONHAZARDOUS AND ENVIRONMETALLY SAFE - The drum can go to the sanitary landfill or be cleaned for reuse.
- 1.2 HAZARDOUS WASTE - This applies to characteristic or listed wastes as shown in 40 CFR, Part 261.21 through 261.33. The drum can be rinsed prior to reuse or disposal as nonhazardous waste.



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1.3 ACUTELY HAZARDOUS WASTE - Acutely hazardous wastes are identified in 40 CFR, Part 261.33(e). Empty drums that previously held an acutely hazardous waste are defined as hazardous wastes. The drum must be triple rinsed prior to reuse or disposal as nonhazardous waste.

2. Provide written direction on the Waste Processing Request Form regarding where the generator should send the empty drum.

3. Return the form to the generator.

BUILDING 889 DRUM RINSING OPERATIONS

1. RECEIVING

1.1 Control - The Waste Processing Request Form will be used to control the type and number of drums which will be accepted for rinsing at any one time. Personnel and space allotments will initially be based on an estimate obtained from warehouse personnel. The initial estimate will be adjusted as practical experience warrants.



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2. STORING

Two cargo containers will be used for storage. One will house the incoming drums and the other the rinsed drums. This will allow a maximum of about 40 drums on hand at any one time. Reaction or containment from incompatible and leaking drums should not be a concern (regarding storage) if the drums are empty.

3. RINSING

3.1 The regulations 261.7(b)(3)(i) require that acutely hazardous waste drums be triple rinsed with an "appropriate solvent" before disposing of the drum as nonhazardous. The regulations do not require that drums returned to the original vendor be rinsed. Empty drums that contained corrosives and toxics and are being recycled to off-site facilities are required by DOE to be rinsed. The decontamination workers at the facility are not expected to make all the necessary decisions. Rather, the Waste Processing Request Form should be reviewed by the hazardous waste coordinator before reaching the decon supervisor. The coordinator will screen each WPRF and note which drums should go directly to the warehouse, which should be rinsed, what to use for the rinse, how to dispose of the rinsate, and where to send the rinsed drums. The decon supervisor will be required to match the drums with the WPRF and to follow the directions provided.



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3.2 A minimum amount of supplies and equipment will be required for this operation. This would include the following:

- A supply of rinse reagents.
- A rinsing device.
- A transfer system for rinse solution and rinsate.
- A collection, storage, and shipping setup for rinsate that cannot go directly to process waste.
- Personnel protective clothing and respiratory equipment.

3.3 For corrosive and reactive chemicals, water is likely to be the rinse solution. For ignitable and toxic organics, a solvent that can be incinerated or solidified will likely be used.

4. RINSATE DISPOSAL

4.1 The rinsate from the drums will be considered a hazardous waste by the EPA. Accordingly, it will require treatment, storage, and disposal (TSD) in compliance with the regulations. The TSD requirements will be specified by the hazardous waste coordinator on the WPRF prior to sending the form to the decon supervisor.

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4.2 Factors involving TSD of the rinsate will be decided on an individual basis; however, the following general techniques will likely be used:

- Water rinse - dispose to the process drain or in rare cases solidify in cement.
- Organic rinse - incinerate or in some cases solidify in envirostone.

5. DISPOSITION OF DRUMS

Rinsed drums will be sent to the warehouse with an "EMPTY-RINSED" tag attached to the drum.

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APPENDIX H-1

DOT Hazardous Materials Class Material

HAZARDOUS MATERIALS CLASS
SUBJECT MATTER

- GENERAL INFORMATION
- PACKAGING, LABELING AND STORING
- DOT TRAINING SLIDES
- RCRA
- SHIPPING AND RECEIVING

DEFINITIONS

HAZARDOUS MATERIAL

A HAZARDOUS MATERIAL IS "A SUBSTANCE OR MATERIAL WHICH HAS BEEN DETERMINED BY THE SECRETARY OF TRANSPORTATION TO BE CAPABLE OF POSING AN UNREASONABLE RISK TO HEALTH, SAFETY, AND PROPERTY WHEN TRANSPORTED IN COMMERCE."

HAZARDOUS WASTE

"[S]OLID WASTE, OR COMBINATION OF SOLID WASTES, WHICH BECAUSE OF ITS QUANTITY, CONCENTRATION OR PHYSICAL, CHEMICAL OR INFECTIOUS CHARACTERISTICS MAY

- (A) CAUSE, OR SIGNIFICANTLY CONTRIBUTE TO AN INCREASE IN MORTALITY OR AN INCREASE IN SERIOUS IRREVERSIBLE, OR INCAPACITATING REVERSIBLE ILLNESS, OR
- (B) POSE A SUBSTANTIAL PRESENT OR POTENTIAL HAZARD TO HUMAN HEALTH OR TO THE ENVIRONMENT WHEN IMPROPERLY TREATED, STORED, TRANSPORTED OR DISPOSED OF OR OTHERWISE MANAGED.

A SOLID WASTE HAS BEEN DEFINED BY CONGRESS AS:

"ANY GARBAGE, REFUSE, SLUDGE FROM A WASTE TREATMENT PLANT, WATER SUPPLY TREATMENT PLANT, OR AIR POLLUTION CONTROL FACILITY AND OTHER DISCARDED MATERIAL INCLUDING SOLID, LIQUID OR CONTAINED GASEOUS MATERIAL RESULTING FROM INDUSTRIAL, COMMERCIAL, MINING AND AGRICULTURAL OPERATIONS, AND FROM COMMUNITY ACTIVITIES.
(EMPHASIS ADDED.)

CHARACTERISTICS OF HAZARDOUS MATERIAL

ROCKY FLATS

TOXIC
FLAMMABLE
REACTIVE
(01234)

DOT

EXPLOSIVES (A, B, C)
FLAMMABLE LIQUID AND SOLID
OXIDIZERS
CORROSIVE LIQUIDS
COMPRESSED GAS
POISONS (A, B, C)
RADIOACTIVE
CRYOGENIC
ETIOLOGIC

EPA

IGNITABILITY
CORROSIVITY
REACTIVITY
EP TOXIC
LISTED WASTE

REGULATIONS

FEDERAL

THERE ARE THREE FEDERAL LAWS THAT CONTROL HAZARDOUS MATERIALS:

- * PUBLIC LAW 93-633 ESTABLISHED THE TRANSPORTATION ACT OF 1974.
(DOT) (CFR 49, PART 172) (GRAZIANO'S TARIFF)
- * THE RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)
OCTOBER 26, 1976. (EPA) (CFR 40, PART 265)
- * THE TOXIC SUBSTANCES CONTROL ACT (TSCA)
OCTOBER 11, 1976 (EPA) (CFR 40, PART 700)

STATE

- * STATE HEALTH DEPARTMENT
- * ROCKY FLATS MONITORING COMMITTEE

ROCKY FLATS

- * BUILDING REGULATIONS
- * HS & E MANUAL
- * OSA
- * QUALITY PROGRAM PLAN
- * PACKAGING, SHIPPING AND TRANSPORTATION PLAN

LIABILITY

- A. UP TO \$10,000 PER DAY PER PERSON RESPONSIBLE WHILE THE SHIPMENT IS IN TRANSIT
- B. FOR WILLFUL VIOLATIONS, UP TO \$25,000 PER DAY PLUS POSSIBLE FIVE YEARS IN JAIL OR BOTH.
- C. PENALTIES ARE SET FORTH IN FEDERAL LAW 95-633, KNOWN AS THE TRANSPORTATION SAFETY ACT OF 1974.
- D. SHIPMENTS OF HAZARDOUS MATERIALS ARE SUBJECT TO "DOT" INSPECTION AT ANY TIME ON PLANT SITE OR WHILE IN TRANSIT.
- E. IF AN IMPROPER SHIPMENT IS MADE, ALL THOSE INDIVIDUALS (PACKER, DRIVER, ETC., AND THEIR SUPERVISION) ARE PERSONALLY LIABLE.

RADIATION

RADIOACTIVITY

ALPHA RAYS

BETA RAYS

GAMMA RAYS

(X-RAYS)*

NEUTRONS

CRITICALITY

MASS

GEOMETRY

REFLECTION

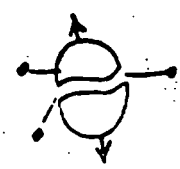
INTERACTION

MODERATORS

POISONS

* NON-NUCLE. R RADIATION

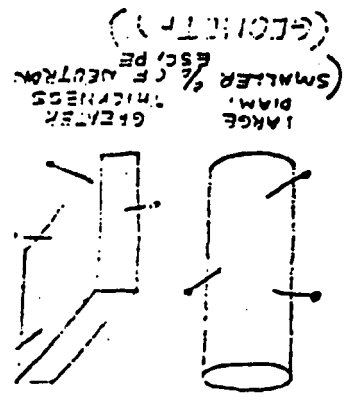
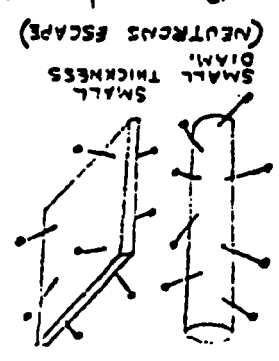
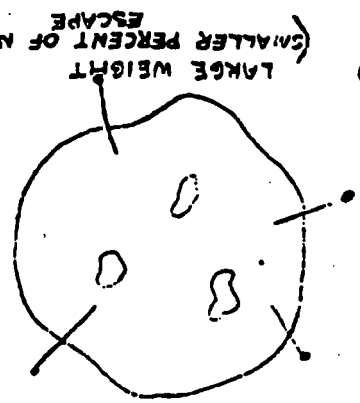
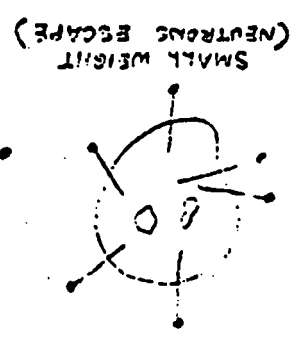
FISSION PROCESS
1. RELEASE OF ENERGY
2. ADDITIONAL NEUTRONS PRODUCED.



NEUTRON INDUCED FISSION

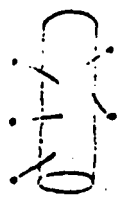


CONTROL FACTORS



① WEIGHT

NO REFLECTOR (NEUTRONS ESCAPE)



REFLECTOR (SOME NEUTRONS PUSHED BACK INTO FISSION MATERIAL)

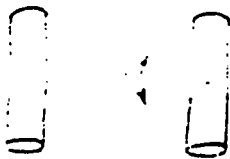


③ REFLECTION

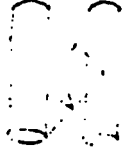
ANY SUBSTANCE SURROUNDING THE FISSION MATERIAL, COMMON EXAMPLES: WATER, OIL, PLASTIC ACID, CEMENT, ETC.

① INTERACTION

(SMALLER TARGETS) WIDELY SPACED



(LARGER TARGETS) CLOSELY SPACED

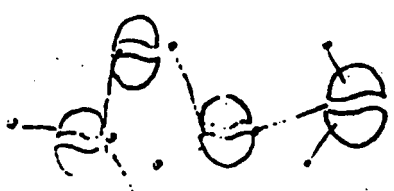


② SIZE & SHAPE (GEOMETRY)

⑥ NUCLEAR POISONS - THE ATOMS OF CERTAIN ELEMENTS OF THE NUCLEAR FISSION PROCESS THAT ARE CAPABLE OF INTERACTING WITH THE FISSION MATERIAL, HYDROGENS, HELIUMS, AND OTHERS, BY CAPTURING THEM, WHICH INCREASES THE CHANCES THAT A NEUTRON WILL CAUSE A FISSION TO OCCUR WHEN IT STRIKES A FISSION ATOM.

COMMON MODERATORS: WATER, OIL, PLASTIC, ORGANIC MATERIALS AND BOREN-10.

⑥ NUCLEAR POISONS - THE ATOMS OF CERTAIN ELEMENTS OF THE NUCLEAR FISSION PROCESS THAT ARE CAPABLE OF INTERACTING WITH THE FISSION MATERIAL, HYDROGENS, HELIUMS, AND OTHERS, BY CAPTURING THEM, WHICH INCREASES THE CHANCES THAT A NEUTRON WILL CAUSE A FISSION TO OCCUR WHEN IT STRIKES A FISSION ATOM.



NUCLEAR CHAIN REACTION (CRITICALITY)
1. ON THE AVERAGE ONE NEUTRON FROM FISSION PROCESS WILL RESULT IN ANOTHER FISSION.

FISSILE MATERIALS

- A. A FISSILE MATERIAL IS ONE WHICH, IN CERTAIN QUANTITIES AND CONFIGURATIONS, IS CAPABLE OF CAUSING A CHAIN REACTION (MASSIVE, HIGH RELEASE OF ENERGY). THE FIVE ELEMENTS WHICH ARE FISSILE ARE: PU 238, PU 239, PU 241, U 233, AND U 235.
- B. CARE MUST BE TAKEN TO ENSURE THAT THE AMOUNT OF FISSILE MATERIAL IN ONE LOCATION DOES NOT EXCEED THAT AMOUNT WHICH IS CAPABLE OF CAUSING A CHAIN REACTION. THE TRANSPORT INDEX TELLS HOW MANY CONTAINERS MAY SAFELY BE STORED IN ONE AREA. THE TRANSPORT INDEX IS WRITTEN ON THE RADIOACTIVE II OR III LABEL ON THE CONTAINER.
- C. RADIOACTIVE MATERIALS ARE CLASSIFIED AS RADIOACTIVE I, II, OR III AND MUST BE LABELED APPROPRIATELY.

PACKAGING

LABELING

STORING

DEPARTMENT OF TRANSPORTATION
HAZARDOUS MATERIALS TABLES

(49 CFR 172.101 and 172.102; Revised as of October 1, 1979; 45 FR 34560, May 22, 1980; 45 FR 43761, June 30, 1980; 45 FR 46419, July 10, 1980; 45 FR 62079, September 18, 1980; 45 FR 74640, November 10, 1980)

Section 172.101—Hazardous Materials Table*

(1) EPA No.	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4A) Ident. Number	(4) Labels required for this material	(5) Packaging		(6) Maximum net quantity in one package		(7) Water shipment			
					(5A) Type of packaging	(5B) Type of packaging (code)	(6A) Placards (quantity or value)	(6B) Cargo (quantity or value)	(7A) Cargo (quantity or value)	(7B) Cargo (quantity or value)	(7C) Other requirements	
	Acetylene, compressed (acetylene or hydrocarbon, dissolved in acetone) (P 2300, 450)	Nonflammable gas	NA195	Non-flammable gas	100-100		None	100	100			
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		
BA	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	None	100-100	1 quart	1 gallon	100	100		
E	Acetic acid (ethanedioic acid) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		
E	Acetic acid, glacial (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
E	Acetic anhydride (ethanedioic anhydride) (P 2300, 450)	Flammable liquid	UN197	Flammable liquid	100-100	100-100	1 quart	1 gallon	100	100		Shade from radiant heat
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TYPES OF CONTAINERS

KNOW THE TYPES OF CONTAINERS USED AT ROCKY FLATS.

TYPES OF CONTAINERS:

- (1) STC - SINGLE TRIP CONTAINER. MAY BE REUSED PROVIDING THEY HAVE BEEN BROUGHT BACK UP TO "DOT" SPECIFICATIONS AND INSPECTED.
- (2) NRC - NON-REUSABLE CONTAINER. MAY NOT BE REUSED FOR HAZARDOUS MATERIALS UNDER ANY CONDITIONS AND SHOULD BE DESTROYED.
- (3) FIBERBOARD BOXES - SPECIFICATIONS ARE FOUND ON THE BOTTOM OF EACH CARTON. THEY REFER TO MANUFACTURER, BURSTING STRENGTH, VOLUME, ETC. BANDS, TAPE, OR LABELS SHOULD NOT BE PLACED OVER THIS AREA.
- (4) SPECIALLY MADE WOOD BOXES. MADE BY MAINTENANCE DEPT. MUST MEET SPECIFICATION IN CFR 49.
- (5) RADIOACTIVE WASTE DRUMS AT ROCKY FLATS ARE PAINTED WHITE OR BUFF COLOR. ONCE THEY ARE PUT INTO SERVICE, THEY MUST BE KEPT INDOORS IN AN ATTENDED AREA.
- (6) THE TYPE CONTAINER TO BE USED FOR EACH TYPE AND AMOUNT OF HAZARDOUS MATERIALS IS SPECIFIED IN CFR 49.

DRUM INVENTORY AND RECORDS

BE FAMILIAR WITH RECORD KEEPING PROCEDURES USED TO TRACK RADIOACTIVE SHIPPING DRUMS AT ROCKY FLATS.

- A. EACH RADIOACTIVE SHIPPING CONTAINER HAS AN INDIVIDUAL CONTROL NUMBER.
- B. FILES ARE RETAINED FOR THE LIFE OF THE CONTAINER, STATING WHERE IT HAS BEEN, THE INSPECTIONS IT HAS GONE THROUGH, ETC.

PROCEDURE FOR SPILL
OR DAMAGED CONTAINER

- * IF CONTAMINATION IS SUSPECTED, CALL RADIATION MONITORING TO CHECK.
- * DO NOT MOVE THE CONTAINER OR ALLOW OTHERS TO WALK THROUGH THE AREA.
- CALL SUPERVISION.
- * IF A CONTAINER HAS BEEN CONTAMINATED, IT MAY NOT BE USED AGAIN UNTIL IT HAS BEEN PROPERLY DECONTAMINATED AND CHECKED BY RADIATION MONITORING.

RE-PACKAGING HAZARDOUS MATERIALS

- A. WHENEVER STANDARD PACKAGES OR CARTONS OF HAZARDOUS MATERIALS MUST BE BROKEN DOWN INTO SMALLER AMOUNTS, THE NEW PACKAGES MUST BE LABELED PROPERLY WITH THE CONTENTS.
- B. A HAZARDOUS MATERIAL SHOULD NOT BE POURED INTO A CONTAINER WHICH PREVIOUSLY HELD ANOTHER HAZARDOUS MATERIAL UNLESS
 - (1) THE CONTAINER HAS BEEN PROPERLY WASHED
 - (2) THE OLD LABEL HAS BEEN REMOVED AND A NEW ONE PUT ON

THE PLACEMENT OF MARKINGS AND LABELS ON SHIPPING CONTAINERS

- A. MARKINGS ARE STENCILED ON. THE PROPER NAME FROM CFR 49 MUST BE PERMANENT AND PRINTED IN ENGLISH ON THE OUT SIDE OF EVERY PACKAGE IN LETTERS AT LEAST 1/2 INCH HIGH. OTHER MARKINGS MAY INCLUDE INFORMATION SUCH AS "FRAGILE", "NO HOOKS", ETC.
- B. LABELS ARE ATTACHMENTS APPLIED OR IMPRINTED ON CONTAINERS INDICATING THE HAZARD CLASS OF THE MATERIALS INSIDE. ALL HAZARDOUS MATERIALS MUST BE LABELED UNLESS SPECIFICALLY EXEMPTED.
- C. EACH PACKAGE MUST HAVE A MINIMUM OF ONE LABEL. RADIOACTIVE SHIPMENTS REQUIRE TWO LABELS, PLACED 180° FROM EACH OTHER (ON OPPOSITE SIDES OF THE CONTAINER).
- D. MULTIPLE HAZARD MATERIALS (THOSE REPRESENTING MORE THAN ONE HAZARD SUCH AS PLUTONIUM NITRATE WHICH IS BOTH RADIOACTIVE AND CORROSIVE) MUST HAVE MULTIPLE HAZARD LABELS.
- E. AT ROCKY FLATS, ALL OF THE REQUIRED HAZARDOUS LABELS ARE PLACED TO THE RIGHT OF THE ADDRESS LABEL ON PACKAGES. ON DRUMS, THE REQUIRED LABELS ARE PLACED BENEATH THE CLOSURE. A DUPLICATE SET OF LABELS IS PLACED 180° OPPOSITE THE FIRST SET IN EACH CASE.

F. EMPTY CONTAINERS MUST BE SECURELY CLOSED AND LABELED WITH AN EMPTY TAG. MAKE SURE THERE IS NO RESIDUE LEFT IN THE CONTAINER. THE PROPER EMPTY TAG FOR A RADIOACTIVE CONTAINER IS 6 X 6 INCHES, BLACK LETTERING ON A WHITE BACKGROUND. OTHER CONTAINERS USE A 3 X 6 INCH EMPTY LABEL WITH BLACK LETTERING ON A YELLOW BACKGROUND. ALL PREVIOUS MARKINGS AND LABELS MUST BE REMOVED FROM EMPTY CONTAINERS.

G. ADHESIVE-BACKED LABELS WILL NOT STICK TO WOOD CARTONS. THEY MUST BE TACKED ON.

H. ONLY ONE HAZARDOUS LABEL IS REQUIRED UNLESS (1) THE CONTAINER EXCEEDS 64 CUBIC FEET, (2) THE MATERIAL IS RADIOACTIVE. THE ONE LABEL SHOULD BE NEAR THE OPENING OR CLOSURE.

I. AT ROCKY FLATS, TWO LABELS ARE USUALLY USED ON ALL PACKAGES TO ENSURE UNIFORMITY OF PRACTICE AND ENSURE AGAINST FALLING OFF.

J. SOME DRUM AND BOX MANUFACTURERS ARE NOW AFFIXING HAZARDOUS LABELS ON CONTAINERS. THIS IS PERMISSIBLE IF THEY MEET THE SPECIFICATION IN OTHERS.

K. THE GROSS WEIGHT OF ALL UNCLASSIFIED, R/DIOACTIVE SHIPMENTS WEIGHING IN EXCESS OF 100 LBS. MUST BE STENCILED ON THE CONTAINER.

- L. UNDER NO CIRCUMSTANCES MAY A HAZARDOUS MATERIAL BE SHIPPED IN A CONTAINER LABELED FOR ANOTHER HAZARD.
- M. HAZARDOUS MATERIALS IN LIQUID FORM MUST HAVE LABELS WITH AN ARROW READING, "THIS END UP". LIQUIDS SHOULD BE PACKAGED WITH ENOUGH ABSORBENT TO ABSORB THREE TIMES THE VOLUME OF THE LIQUID.
- N. ALL CONTAINERS MUST HAVE AN ADDRESS LABEL INCLUDING THE NAME AND ADDRESS OF THE CONSIGNEE AND THE CONSIGNOR.
- O. IF THE MATERIAL IS HAZARDOUS WASTE, EACH CONTAINER OF 110 GALLONS OR LESS USED FOR TRANSPORT OF THE HAZARDOUS WASTE MUST BE SPECIFICALLY MARKED WITH:

"HAZARDOUS WASTE, FEDERAL LAW PROHIBITS IMPROPER DISPOSAL. IF FOUND CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY OR THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY."

ROCKWELL INTERNATIONAL
ROCKY FLATS PLANT
P. O. BOX 464
GOLDEN, COLORADO 80401

MANIFEST NUMBER _____

STORAGE PROCEDURES

- A. HAZARDOUS MATERIALS SHOULD NEVER BE STACKED UNLESS ONE HAS SPECIFIC INSTRUCTIONS TO DO SO.
- B. NUCLEAR SAFETY HAS PRE-ESTABLISHED SAFE STORAGE LIMITS FOR SPECIFIC SIZED CONTAINERS IN SPECIFIC STORAGE AREAS. THESE LIMITS SHOULD NOT BE EXCEEDED UNDER ANY CIRCUMSTANCES.
- C. FISSILE MATERIALS MUST BE KEPT SPACED APART (USING MINIMUMS PROVIDED BY NUCLEAR SAFETY).
- D. THE NUCLEAR SAFETY DEPARTMENT IS THE FINAL AUTHORITY IN DETERMINING THE VOLUME OF MATERIAL WHICH CAN BE SAFELY STORED IN A SPECIFIC AREA.
- E. THE TRANSPORT INDEX TELLS YOU HOW MANY RADIOACTIVE CONTAINERS MAY SAFELY BE STORED IN ANY GIVEN AREA. THE TOTAL INDEX FOR ALL CONTAINERS IN AN AREA SHOULD NOT EXCEED 50.
- F. THE TRANSPORT INDEX OF SPECIFIC SUBSTANCES IS PRE-DETERMINED BY NUCLEAR SAFETY OR BY A READING FROM HEALTH PHYSICS (RADIATION MONITORING) AT A DISTANCE OF ONE METER.

SHIPPING

AND

RECEIVING

PLACARDING VEHICLES CARRYING HAZARDOUS MATERIALS

- A. THE REQUIRED PLACARDING FOR A GIVEN HAZARDOUS MATERIAL IS FOUND IN CFR 49.
- B. THE SHIPPER IS RESPONSIBLE FOR PROVIDING THE PLACARDS.
- C. THE DRIVER MAY REFUSE THE PLACARDS WHICH ARE OFFERED IF HE HAS HIS OWN. THIS MUST BE NOTED ON THE SHIPPING PAPERS.
- D. IT IS THE DRIVER'S RESPONSIBILITY TO SEE THAT THE VEHICLE IS PROPERLY PLACARDED.
- E. THERE MUST BE PLACARDS ON EACH SIDE OF THE VEHICLE, ONE ON THE FRONT AND ONE ON THE REAR.
- F. IF A VEHICLE IS CARRYING MORE THAN ONE TYPE OF HAZARDOUS MATERIAL, IT MUST BE PLACARDED FOR EACH.

NOTE:

THE TRANSPORT INDEX APPLIES TO SHIPPING OF HAZARDOUS MATERIALS (RADIOACTIVE) IN THE SAME CONTEXT DESCRIBED FOR STRIPAGE.

SHIPPING PAPERS

- A. THE DRIVER IS RESPONSIBLE FOR THE SHIPPING PAPERS WHILE IN TRANSIT.
- B. SHIPPING PAPERS MUST BE KEPT ON THE SEAT NEXT TO THE DRIVER. WHEN THE VEHICLE IS UNATTENDED, THEY MUST BE KEPT ON THE DRIVER'S SEAT OR IN THE LEFT HAND POCKET.
- C. THE SHIPPING PAPERS MUST CONTAIN THE NAMES AND ADDRESSES OF THE CONSIGNEE AND CONSIGNOR. HAZARDOUS MATERIALS MUST BE (1) LISTED FIRST, (2) HIGHLIGHTED, OR (3) CHECKED IN A SPECIAL COLUMN.
- D. HAZARDOUS WASTE MUST BE ACCOMPANIED BY A MANIFEST. THIS MAY BE INCORPORATED INTO EXISTING SHIPPING PAPERS BUT IT MUST INCLUDE INFORMATION BEYOND THAT REQUIRED BY "DOT".
- E. THE BILL OF LADING WHICH MUST INCLUDE:
 - (1) THE PROPER NAME (FROM CFR 49) OF THE CONTENTS.
 - (2) THE NUMBER OF ITEMS.
 - (3) HAZARDOUS MATERIALS SHOULD BE LISTED FIRST, HIGHLIGHTED, OR CHECKED IN A SPECIAL COLUMN.
 - (4) ANY SPECIAL INSTRUCTION FOR HANDLING SUCH AS "FRAGILE", "DO NOT DROP", ETC.
 - (5) THE NAME AND ADDRESS OF THE CONSIGNEE AND CONSIGNOR.
 - (6) CONT. INER SIZES AND WEIGHTS.

TRANSPORTATION ACCIDENTS
(APPROPRIATE ACTIONS)

- A. CONTACT ROCKY FLATS DISPATCHER.
- B. REQUEST AID FROM HEALTH PHYSICS.
- C. KEEP BYSTANDERS AWAY AND UPWIND.
- D. DO NOT ALLOW ANYONE TO MOVE CONTAINERS.
- E. IF THE DRIVER SUSPECTS THAT THE VEHICLE IS CONTAMINATED, RADIATION MONITORING SHOULD BE CALLED TO CHECK THE VEHICLE.
- F. CONTACT THE CHEMICAL TRANSPORTATION EMERGENCY CENTER (CHEMTREC) 1-800-424-9300, OPERATED BY THE CHEMICAL MANUFACTURERS ASSOCIATION.

PROCEDURES FOR RECEIVING SHIPMENTS

- A. MAKE SURE HAZARDOUS MATERIALS ARE UNLOADED FIRST.
- B. SPACE RADIOACTIVE MATERIALS APART; DO NOT STACK.
- C. NOTE DAMAGE, OVERAGES, OR SHORTAGES ON SHIPPING PAPERS. SEND AN OVER-SHORT-DAMAGE REPORT TO TRAFFIC AND PURCHASING.
- D. IF DAMAGE IS SUSPECTED, DO NOT OPEN. CALL SUPERVISION IMMEDIATELY.

LOADING, UNLOADING, AND MOVING HAZARDOUS MATERIALS

- A. THE TRAFFIC DEPARTMENT AT ROCKY FLATS IS RESPONSIBLE FOR APPROVAL OF LOADING, UNLOADING, AND MOVEMENT OF ALL MATERIALS.
- B. HEALTH PHYSICS SHOULD BE CALLED WHENEVER THERE IS A QUESTION OF CONTAMINATION.
- C. WHEN LOADING OR UNLOADING A VEHICLE WHICH CONTAINS BOTH HAZARDOUS AND NON-HAZARDOUS MATERIALS, THE HAZARDOUS MATERIALS SHOULD BE HANDLED FIRST.
- D. ANY DAMAGE OR SHORTAGES MUST BE NOTED ON SHIPPING DOCUMENTS AT TIME OF RECEIPT.
- E. CONTAINERS OF HAZARDOUS MATERIALS MUST ALWAYS BE SECURED WITH PROPER TIE-DOWNS OR CHAINS.

ON-SITE MATERIALS TRANSFER
(PAPER WORK)

A. MATERIALS ARE MOVED BY:

MTR

ITR

WASTE DRUM TRANSFERS

RIRS - RECEIVING INSPECTION RECEIPT SHEET

SRS - SUPPLEMENTARY RECEIVING SHEET

B. MATERIAL TRANSFER AND INTERNAL TRANSFER RECEIPTS
ARE USED TO MOVE MATERIAL AT ROCKY FLATS FROM ONE
AREA, OR ACCOUNT, TO ANOTHER.

SPECIAL EXEMPTIONS

- A. SPECIAL EXEMPTIONS ARE GRANTED FOR ONE TIME ONLY.**
- B. THE SPECIAL EXEMPTION NUMBER MUST APPEAR ON ALL SHIPPING CONTAINERS AND ALL SHIPPING PAPERS.**

OVERSEAS SHIPMENTS

- A. OVERSEAS SHIPMENTS MUST MEET ADDITIONAL REQUIREMENTS OF "DOT" AND INTERNATIONAL REGULATIONS FOR PACKAGING, MARKING, AND LABELING.
- B. DO NOT MOVE AN OVERSEAS SHIPMENT EXCEPT THROUGH DOE AREA OFFICE DIRECTION.



**Research and
Special Programs
Administration**

The following definitions have been abstracted from the title of Federal Regulations, Title 49-Transportation, Part 191.1-Refers to referenced sections for complete details. The following definitions are outstanding or a content interpretation is not available.

HAZARDOUS MATERIAL - Means a substance or material which has been determined by the Secretary of Transportation to be critical and which poses an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated. (49 CFR 171.50)

MULTIPLE HAZARD - A material meeting the definition of more than one hazard class is classified according to the sequence shown below. Table 1.

HAZARD CLASS	DESCRIPTION
	An <u>Explosive</u> - Any chemical, mixture, or device, the primary or common purpose of which is to function by explosion, i.e., with substantial or violent release of gas and heat, unless such compound, mixture, or device is otherwise specifically classified in Parts 170-174. (Sec. 173.50)
<u>CLASS A EXPLOSIVE</u>	Detonating or otherwise of minimal hazard. The nine types of Class A explosives are defined in Sec. 173.53.
<u>CLASS B EXPLOSIVE</u>	In general, <u>Class B</u> explosives are deflagrating rather than detonating and include self-propelled devices such as special fireworks, flash powders, etc. (Sec. 173.58)
<u>CLASS C EXPLOSIVE</u>	Certain types of manufactured articles containing Class A or Class B explosives, or both, as components in restricted quantities, and certain types of fireworks. (Sec. 173.100)
<u>HAZARD CLASS</u>	Any chemical, mixture, or device which has been tested in accordance with the procedures in 173.100 and found to be a Class A, B, or C explosive.

HAZARD CLASS	DEFINITION
<u>FLAMMABLE GAS</u>	Any compressed gas meeting the requirements for lower flammability limit, flame limit, flash point, flash point, or other propagation criteria as specified in Sec. 173.101(b).
<u>NONFLAMMABLE GAS</u>	Any compressed gas other than a flammable compressed gas.
<u>FLAMMABLE SOLID</u>	Any solid material, other than an explosive, which is liable to catch fire through friction, impact, or other means, or which, when ignited, burns so vigorously and persistently as to create a serious transportation hazard. (Sec. 173.150)
<u>ORGANIC PEROXIDE</u>	An organic compound containing the bivalent -O-O- structure and which may be considered a derivative of hydrogen peroxide, where one or more of the hydrogen atoms have been replaced by organic radicals must be classified as organic peroxide unless--(Sec. 173.117) is detailed.
<u>OXIDIZER</u>	A substance such as an inorganic peroxide, superoxide, or a nitrate, that yields oxygen readily to stimulate the combustion of organic matter. (Sec. Sec. 173.151)
<u>POISON A</u>	<u>Extremely Dangerous Poisons</u> - Gases, liquids, or solids of such nature that a very small amount of the gas, or vapor, or the liquid, mixed with air, is enough to be fatal. (Sec. 173.133)
<u>POISON B</u>	<u>Less Dangerous Poisons</u> - Substances, liquids, or solids (including pastes and semi-solids), other than Class A or Irritating materials, which are known to be as toxic to man as to afford a hazard to health during transportation; or which, in the absence of adequate data on human toxicity, are presumed to be toxic to man. (Sec. 173.134)
<u>REACTIVE SOLID</u>	A solid substance which, on open contact with air or when exposed to friction, impact, or other means, or internally, initiates a chemical reaction which may result in fire, explosion, or other hazard. (Sec. 173.152)

HAZARD CLASS	DEFINITIONS
<u>ORM-E</u>	A material (including a solid when wet with water) capable of causing significant damage to a transport vehicle or vessel or leakage during transportation. Materials meeting one or more of the following criteria are ORM-E materials: (i) A material that has a corrosion rate exceeding 0.250 inch per year on steel or aluminum (nonclad 7075-T6) at a test temperature of 130°F. An acceptable test is described in NACE Standard Test Method T-247, specifically designated by name in § 173.500(b)(2) [Sec. 173.500(b)(2)]
<u>ORM-C</u>	A material which meets the definition of a flammable liquid as an ORM-A or ORM-B material, but which is not a flammable liquid unless properly identified and packaged for transportation as an ORM-C material as set forth in § 173.500(b)(3) [Sec. 173.500(b)(3)]
<u>ORM-D</u>	A material such as a polymer compound, which, though otherwise subject to the regulations of this subchapter, presents a distinct hazard during transportation due to its form, quantity, or packaging. They must be transported in bulk containers as defined in § 172.101. A shipping description applicable to a material or category of ORM-D materials is found in § 173.500(b)(4) [Sec. 173.500(b)(4)]
<u>ORM-F</u>	A material that is not included in any other hazard class, but is subject to the regulations of this subchapter. These materials include (i) hazardous wastes and (ii) Hazardous substances as defined in Sec. 171.8. [Sec. 173.500(b)(5)]

THE FOLLOWING ARE OFFERED TO EXPLAIN ADDITIONAL TERMS USED IN PREPARATION OF HAZARDOUS MATERIALS FOR SHIPMENT. (Sec. 171.8)

<u>CONSUMER COMMUNITY</u> (Sec. 171.8)	Means a material that is packaged or distributed in a form intended and suitable for sale through retail sales and for instrumentalities for consumption by individuals for personal care or household use. This term also includes drugs and medicines. (Sec. 171.8)
<u>FLASH POINT</u>	Means the minimum temperature at which a substance produces flammable vapors when in contact with a spark or flame will ignite. See § 173.500(b)(6) [Sec. 173.500(b)(6)]
<u>HAZARDOUS MATERIALS</u>	Means a material that is classified as a hazardous material for transportation. See the classification criteria in § 173.500(b)(1) [Sec. 173.500(b)(1)]
<u>HAZARDOUS SUBSTANCES</u>	For transportation purposes, a hazardous substance is a liquid or solution, or a solid, as defined by the term "H" of the Hazard Communication Regulation, 29 CFR 162.101, and transportation in one package, or in one transport vehicle, packaged and labeled in accordance with the requirements of § 173.500(b)(1) [Sec. 173.500(b)(1)]

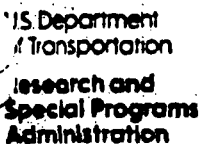
<u>HAZARDOUS WASTES</u>	For transportation purposes, means any material that is subject to the hazardous waste manifest requirements of the Environmental Protection Agency in CFR, Title 40, Part 123, Chapter I. (Sec. 171.8) For details on the Hazardous Waste and Consolidated Permit Regulations, refer to CFR, Title 40, Parts 260-267 and Parts 122-125. Questions regarding these regulations, call Toll Free: (800) 424-9346 or (202) 554-1477.
<u>LIMITING QUANTITY</u>	Means the maximum amount of hazardous material as specified in these sections, applicable to the particular hazard class, for which there are specific exceptions from the requirements of this subchapter. See Sec. 173.118, 173.118(a), 173.153, 173.244, 173.306, 173.345 and 173.367.
<u>REPORTABLE QUANTITY</u>	For transportation purposes, means the quantity of hazardous substance and/or hazardous material as specified in the Hazardous Material Table, Column 2 and 3, and in the latter "B" in column 1. (Sec. 171.9)
<u>SPONTANEOUSLY COMBUSTIBLE MATERIAL (SOLID)</u>	Means a solid (including sludges and pastes) which may undergo spontaneous heating or self-ignition under conditions normally incident to transportation or which may, upon contact with the atmosphere, undergo a significant increase in temperature and ignite. (Sec. 171.6)
<u>WATER REACTIVE MATERIAL (SOLID)</u>	Means any solid substance (including sludges and pastes) which, by interaction with water, is likely to become spontaneously flammable or to give off flammable or toxic gases in dangerous quantities. (Sec. 171.8)

NOTE: This handout is designed as a training aid for all interested parties who may become involved with hazardous materials. It does not relieve persons from complying with the Department of Transportation Hazardous Materials Regulations. Final authority for use of these hazard classes and definitions is found in CFR, Title 49, Parts 100-177.

Information Services Division, INT-11
Office of Operations and Enforcement
Materials Transportation Bureau
Research and Special Programs Administration
Department of Transportation
Washington, D.C. 20590

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DOT/OPD 100-177



GUIDE FOR MARKINGS

The following information has been abstracted from the Code of Federal Regulations (CFR), Title 49 Transportation, Parts 100-199. Refer to the appropriate Sections for details.

NOTE: Rulemaking proposals are outstanding or are contemplated concerning the regulations. Keep up to date with the changes.

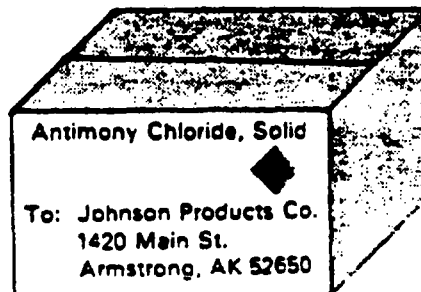
MARKING - means the application of the descriptive name, proper shipping name, hazard class, identification number (when authorized), instructions, cautions, weight or a combination thereof on the outside shipping container. Marking also includes the specification marks for both the inside and outside shipping containers required by the Hazardous Materials Regulations.

DESCRIPTIVE INFORMATION

GENERAL REQUIREMENTS (§172.300-172.304)

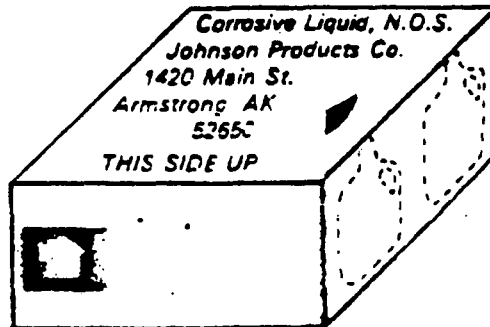
All containers of hazardous materials, i.e. packages, freight containers, or transport vehicles, must, unless specifically exempted, be marked with the proper shipping name(s) of the contents and the name and address of either the consignee or consignor. All markings must be:

1. Durable, in English, and printed on or affixed to the surface of the package or on a label, tag or sign.
2. On a background of a sharply contrasting color and unobscured by labels or attachments.
3. Away from other markings that could reduce its effectiveness.



LIQUIDS - INSIDE CONTAINERS (\$172.312)

1. Inside containers must be packed with closures in the upright position.
2. Must be marked on the outside with "THIS END UP" or "THIS SIDE UP".
3. Arrows must be used only to show orientation of package. An arrow symbol indicated by ANSI Standard MH9.11968 "THIS WAY UP". Pictorial (arrows) of goods is recommended.

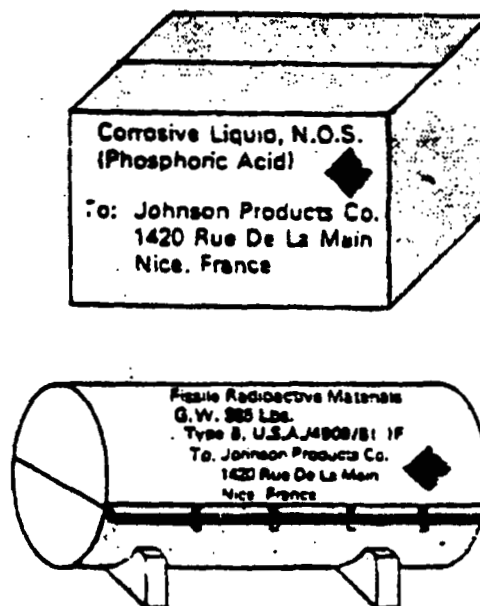


EXPORT BY WATER (§172.302)

All n.o.s. entries, when authorized in §172.101 or §172.102, must have the technical name(s) of the material immediately following the proper shipping name for export by water. For mixtures (two or more) hazardous materials, the technical name of at least two components must be identified.

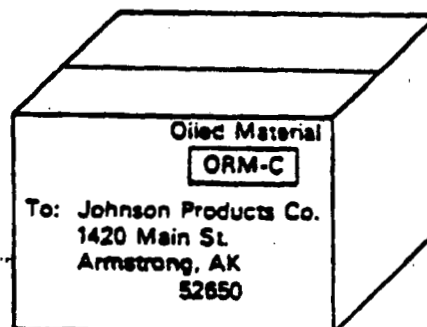
RADIOACTIVE MATERIALS (§172.310)

1. Containers weighing over 110 pounds (gross weight) must be marked on the container.
2. Must be marked "TYPE A" or "TYPE B" as required in letters at least 1/2" high.
3. For export, the letters "USA" must follow the specification markings or package certification.

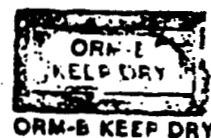
**OTHER REGULATED MATERIALS (ORM'S) (§172.316)**

ORM materials must be designated immediately following or below the proper shipping name marking within a rectangular border approximately 1/4 inch larger on each side of the designation. The appropriate designation must be one of the following:

- | | |
|--------------------|--------------|
| 1. ORM-A | 5. ORM-D |
| 2. ORM-B -KEEP DRY | 6. ORM-D-AIR |
| 3. ORM-B | 7. ORM-E |
| 4. ORM-C | |



NOTE: These markings serve as the certification by the shipper that the material is properly described, classed, packaged, marked and labeled (when appropriate) and in proper condition for transportation. Use of this type of certification does not preclude the requirement for a certificate on the shipping paper (§172.316(c)).



EXAMPLE

AUTHORIZED CONTAINERS IN OUTSIDE CONTAINERS

When a DOT specification container is required for a hazardous material and that container is overpacked in another container meeting the requirements of §173.21 and §173.24, the outside container must be marked in accordance with §173.25.

EXAMPLES: "THIS SIDE UP" or "THIS END UP" or "INSIDE PACKAGES COMPLY WITH PRESCRIBED SPECIFICATIONS"

CYLINDERS - All cylinders must be marked in accordance with §173.34 and §173.35 through §173.306. Cylinders passing reinspection and retesting must be marked in accordance with §173.34(c)(6).

PORTABLE TANKS (§172.326 and §172.332) - Portable tanks must display the proper shipping name in letters at least 2 inches high and placed on two opposite sides. Identification numbers [§§171.101 and 171.102 (when authorized)] are required on each side and each end for capacities of 1,000 gallons or more and on two opposing sides in association with the proper shipping name for capacities of less than 1,000 gallons. The name of the owner or lessee must be displayed. Tanks carrying compressed gases (DOT-51) must have all inlets and outlets, except safety relief valves, marked to designate whether or not they communicate with vapor or liquid. [§178.245-6(b)].

NOTE: When different hazardous materials are transported in marked portable tanks, the shipping name and the identification number displayed must identify the material.

CARGO TANKS - HIGHWAY (COMPRESSED GASES) (§172.328) - Cargo tanks must be marked, in letters no less than 2 inches high, with either the proper shipping name of the gas or an appropriate common name, such as "Refrigerant Gas". Cargo tanks must only be marked, i.e. proper shipping name and identification number [when authorized (§§171.101 and 171.102)] for the material contained therein. DOT MC 331 tanks must have inlets and outlets, except safety relief valves, marked to designate whether they communicate with liquid or vapor when the tank is filled to its maximum permitted silling density. [§178.337-9(c)].

TANK CARS - RAIL (§172.330) - Tank cars, when required to be marked with the proper shipping name by Parts 173 and 179, must be marked in letters at least 4 inches high with at least 5/8 inch stroke with the proper shipping name or the appropriate common name. Identification number markings (when authorized) must be displayed on each side and each end [§§171.101 and 171.102 (when authorized)]. Tank cars must only be marked for the material contained therein.

OTE: See referenced Sections for requirements for DOT-106 and DOT 110 tank car tanks.

EXAMPLE OF PLACARD AND PANEL WITH IDENTIFICATION NUMBER



NOTE: The Identification Number (ID No.) may be displayed on placards or on orange panels on tanks. Check the sides of the transport vehicle if the ID number is not displayed on the ends of the vehicle.

OTHER MARKING REQUIREMENTS

REQUALIFIED CONTAINERS - Reusable cylinders, portable tanks, cargo tanks and tank cars are required to be either visually inspected or retested at periodic intervals. When this is accomplished, the date of the requalification must be shown on the container as required in §§173.24, 173.31, 173.32, 173.33 and 173.34.

REUSE OF CONTAINERS - Some steel containers in the DOT Series (DOT-17C, 17E and 17H) may be qualified for reuse by a reconditioner of drums who is registered with the Department of Transportation. These drums must meet the requirements of §173.26(m) i.e. old labels removed, exemption number (if any) and descriptive markings removed and the drum reconditioned. Other containers may be reused under varying conditions. See §173.28 for details.

CARGO HEATERS - Cargo heaters authorized for use with flammable liquid or gas must be marked in accordance with §177.834(1)(2)(e) and (f).

MOTOR VEHICLES - Marking of motor vehicles and special requirements are found in §§177.823 and 177.824.

SPECIFICATION CONTAINERS

Markings on specification containers must generally identify: (1) the DOT specification number to which the container is made (Parts 178 and 179); (2) the manufacturers name and address or symbol (registered with the Associate Director for the Office of Hazardous Material Regulation). Duplicate symbols are not authorized. All containers must comply with the marking requirements of §173.24 and the appropriate Section(s) of Parts 178 and 179. Exceptions for Canadian and other import/export situations may be found in §§171.12 and 173.8.

NOTE: For certain containers, specific detailed information such as original test date information and type of material which may be required can be found in Parts 178 and 179.












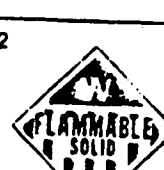










This publication does not contain all the marking requirements. It is designed as a guide only. For details for all markings, consult Code of Federal Regulations, Title 49, Parts 100-199.

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Department of Transportation
Research and Special Programs Administration
Materials Transportation Bureau
Office of Operations and Enforcement
Information Services Division, DMT-11
Washington, D.C. 20590

HAZARDOUS MATERIALS Warning Placards

* Numbers in each square refer to (Illustration numbers), Tables 1 and 2.

1 	2 	3 	4 	5 	6 
7 	8 	9 	10 	11 	12 
13 	14 	15 	16 	17 	18 
Rail Placards  		Highway Shipments   Cargo Tanks and Portable Tanks		Dangerous Placard 1 When a freight container, rail car or motor vehicle contains two or more classes of hazardous materials requiring different placards specified in TABLE 2 the DANGEROUS placard may be used in place of the separate placards specified for each class. However: 2 When 5,000 pounds or more of one class of hazardous material is loaded at one loading facility, the placard for that class in TABLE 2 must be applied.	

General Guidelines on Use of Placards

Table 1

Placard motor vehicles, freight containers, and rail cars containing "any quantity" of hazardous materials listed in TABLE 1.

Hazard Classes	* No.
Class A explosives	1
Class B explosives	2
Poison	3
Flammable gas	4
Nonflammable gas (Chlorine)	5
Nonflammable gas (Fluorine)	6
Nonflammable gas (Oxygen, pressurized liquid)	7
Combustible liquid	8
Flammable liquid	9
Flammable solid	10
Oxidizer	11
Organic peroxide	12
Poison B	13
Corrosive material	14
Irritating material	15

Table 2

- Placard motor vehicles and freight containers containing 1,000 pounds or more gross weight of hazardous materials classes listed in Table 2.
 - Placard any quantity of hazardous materials classes listed in Tables 1 and 2 when offered for transportation by air or water.
- Placard rail cars containing any quantity of hazardous materials classes listed in Table 2 except when less than 100 pounds gross weight of hazardous materials is transported in TOFC (Transfer on flat car) or COFC (Container on flat car) service.

Hazard Classes

Hazard Classes	* No.
Class C explosives	16
Blasting agent	17
Nonflammable gas	18
Nonflammable gas (Chlorine)	19
Nonflammable gas (Fluorine)	20
Nonflammable gas (Oxygen, pressurized liquid)	21
Combustible liquid	22
Flammable liquid	23
Flammable solid	24
Oxidizer	25
Organic peroxide	26
Poison B	27
Corrosive material	28
Irritating material	29

CARGO AND PORTABLE TANKS

- Cargo tanks containing any quantity of hazardous material must be placarded.

- Portable tanks having a capacity of more than 1,000 gallons or more must be placarded.
- Portable tanks having a capacity of more than 1,000 gallons or more must be placarded on the two ends closest to the cargo.

FREIGHT CONTAINERS

- Freight Containers 1640 cubic feet or more must be placarded on all four sides.

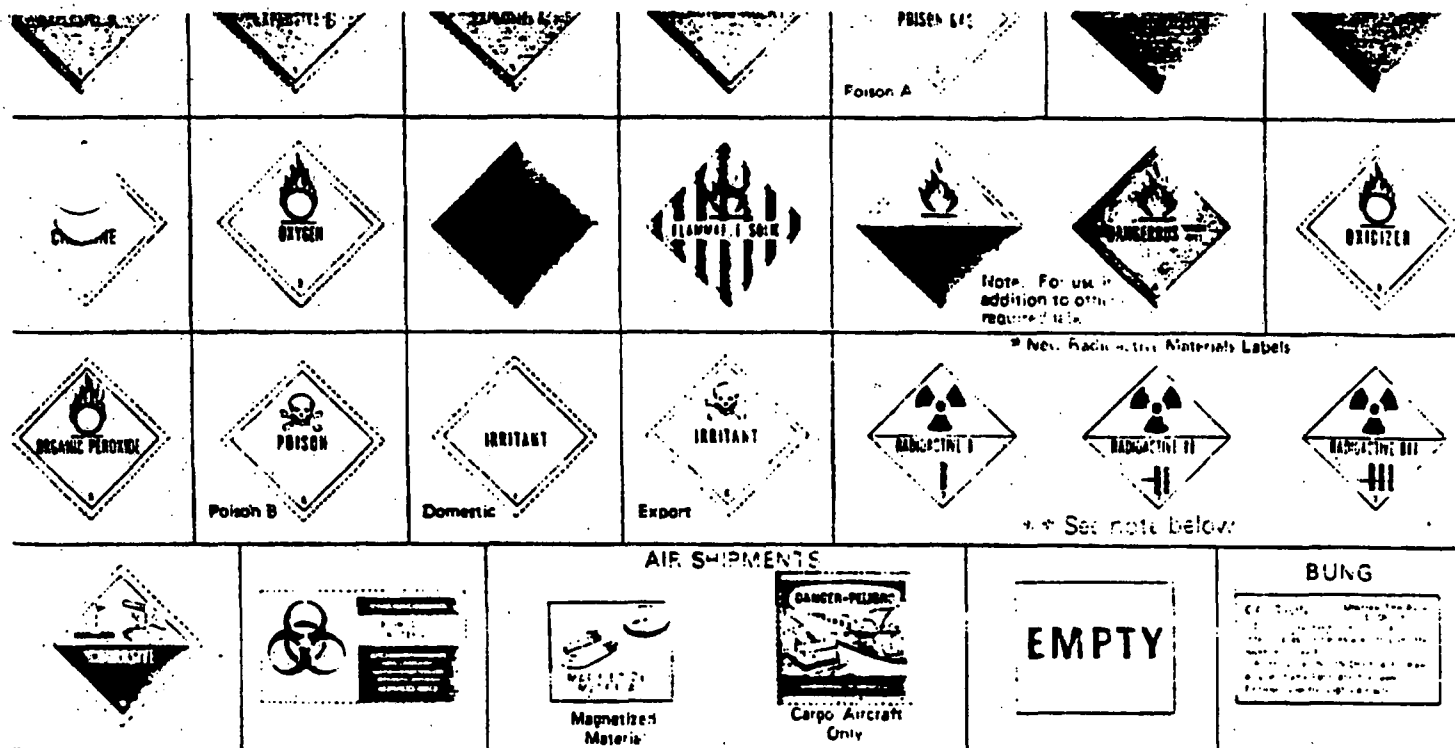
- Any container placarded on one side.

- Highway Freight Containers must be placarded on all four sides when they contain hazardous materials in Table 2.

OTHER PLACARDING REQUIREMENTS

- Chlorine, Combustible, Flammable, or Oxygen Placards - See 172.504, Table 2.
- Fuel Oil Placard - See 172.544 (c).
- Gasoline Placard - See 172.542 (a).

- Shipping Backplacard for Bulk Shipments - See 172.504 and 172.507.
- Empty Placard - See 172.521.



General Guidelines on Use of Labels

1 Each person who offers a hazardous material for shipment must label the package containing the material, if required, with the appropriate label. (Sec. 172.400 (a))

2 Labels may be affixed to packages even though not required by the regulations, provided each label represents a hazard of the material in the package. (Sec. 172.401)

3 Exceptions to the labeling requirements for limited quantities of certain hazardous materials are specified in the regulations.

4 The number appearing at the bottom corner of some labels represent the UN and IMCO hazard class numbers. These are permitted, but not required, by DOT regulations. (Sec. 172.400 (g))

Labels, when required, must be affixed to or printed on the surface of the package near the marked proper shipping name. (Sec. 172.406 (a))

6 When two or more different warning labels are required, they must be displayed next to each other. (Sec. 172.406 (b))

7 When two or more different hazard labels are required, they must be displayed next to each other, within the same row, and the labels must be placed in the same order as the hazard class numbers. (Sec. 172.406 (c))

8 Packages containing a sample of a hazardous material other than an explosive must be labeled in accordance with the requirements of Sec. 172.402 (h). (For Explosives, see Title 49, CFR, Part 173, Subpart C)

9 A material classified as an Explosive A, Poison A, or Radioactive material, that also meets the definition of another hazard class, must be labeled as required for each class. (Sec. 172.402 (b))

10 Packages containing Radioactive material, that also meets the definition of one or more additional hazards, must be labeled as a Radioactive material and, for each additional hazard, on each in front of the package. (Sec. 172.402 (c))

11 A material classified as an Corrosive, Flammable solid, or Flammable liquid, that also meets the definition of Poison A, Poison B, or Poison C, must be labeled as a Poison A, Poison B, or Poison C, in addition to the other hazard label. (Sec. 172.402 (a)(3))

12 A material classified as a Flammable solid, that also meets the definition of a water reactive material, must have both FLAMMABLE SOLID and DANGEROUS WHEN WET labels affixed. (Sec. 172.402 (a)(4))

13 For OXYGEN, the word "OXYGEN" may be used in place of the word "OXIDIZER" on the OXIDIZER label. (Sec. 172.405 (a)) For foreign shipments, the NON-FLAMMABLE GAS label may also be required.

14 For CHLORINE, a CHLORINE label may also be used in place of the NON-FLAMMABLE GAS and POISON labels. (Sec. 172.405 (b)) For foreign shipments, the NON-FLAMMABLE GAS label may also be required.

* New labels may be used in lieu of old labels. After January 1, 1982, new labels must be used.

The following are the new labels for DOT hazardous materials labeling and packaging requirements. For details, refer to Title 49, Chapter of Federal Regulations, Part 173.



U.S. DEPARTMENT OF TRANSPORTATION
Federal Motor Vehicle Safety Council
Hazardous Materials Division
Washington, D.C. 20590

CH 111
FEB 1981

NOTE: Printing Errors	
RADIOACTIVE I	HAZARD LABELS
1. Top portion of RADIOACTIVE I label	HAZARD LABELS
2. Bottom portion of RADIOACTIVE I label	HAZARD LABELS

COD078343407

Date: November 1, 1985
Revision No.: 0
H

APPENDIX H-2

RCRA Training Program Sample Test

HAZARDOUS WASTE

DO NOT MARK ON THIS TEST BOOKLET

- | | | |
|--|---|---|
| 1. The federal law dealing with Hazardous Waste is called the Resource Conservation Recovery Act (RCRA) of 1976. | T | F |
| 2. The Environmental Protection Agency (EPA) is the Government agency responsible for regulating hazardous waste. | T | F |
| 3. The EPA's objective under RCRA is to regulate hazardous waste from the time it is generated until the time it is finally and safely disposed of. | T | F |
| 4. Only <u>generators</u> and <u>treatment disposal sites</u> must notify the EPA of hazardous waste activity. | T | F |
| 5. Generators, transporters, and treatment storage and disposal facilities must obtain an <u>I.D. number</u> from the Environmental Protection Agency. | T | F |
| 6. Identification of Hazardous Waste utilizes EPA published lists, specific tests for various characteristics, and individual knowledge of the wastes. | T | F |
| 7. The <u>transporter</u> is responsible for determining if a waste is hazardous. | T | F |
| 8. Ignitability, corrosivity, reactivity, and EP toxicity are the four EPA hazard characteristics. | T | F |
| 9. All four hazardous waste characteristics must be present in order for a waste to be treated as hazardous. | T | F |
| 10. A generator who finds at a later date that previously nonhazardous waste is now considered hazardous will not be held responsible. | T | F |
| 11. The "small quantity generator" exclusion applies to those generating less than 100 kg per month or 220 pounds per month. | T | F |
| 12. Existing facilities have up to 3 years to report a hazardous waste after it has been listed. | T | F |

- | | | |
|---|---|---|
| 13. Some of the hazardous wastes generated at Rocky Flats include ignitable solvents, halogenated solvents, photographic solutions, and metal heat treating salt. | T | F |
| 14. Because the Manifest Document is a signed statement, it does <u>not</u> need to include such information as quantity of waste or number of containers. | T | F |
| 15. Rocky Flats must keep a signed copy of each Manifest Document for at least 5 years. | T | F |
| 16. If a generator does not receive their copy of the manifest from the transporter within 35 days or cannot trace it in the next 10 days, an exception report must be filed after 45 days by the generator. | T | F |
| 17. The first step of the Rocky Flats procedure for disposing of the hazardous waste is to complete a Waste Processing Request form. | T | F |
| 18. Since onsite transportation of hazardous waste does not cross public roadways, Rocky Flats is exempt from Department of Transportation (DOT) regulations regarding packaging, marking, labeling, and securing of cargo. | T | F |
| 19. <u>Transporters</u> are responsible for reporting of spills during hazardous waste shipping. | T | F |
| 20. The law allows <u>transporters</u> to mix wastes without becoming hazardous waste generators. | T | F |
| 21. Emergency procedures for spills at Rocky Flats include immediate action to stop or contain the spill and immediate notification of the shift superintendent. | T | F |
| 22. The current law makes hazardous waste training voluntary at Rocky Flats. | T | F |
| 23. Noncompliance with RCRA standards is punishable with a \$25,000 fine and/or jail. | T | F |
| 24. Rocky Flats is characterized only as a generator facility. | T | F |
| 25. Hazardous waste training is required every 2 years. | T | F |

- | | | |
|---|---|---|
| 26. A Manifest Document does not accompany nonradioactive hazardous waste shipped off plantsite. | T | F |
| 27. The plant's ground water monitoring program is exempt from the RCRA law. | T | F |
| 28. Hazardous waste containers should be nonleaking, compatible with contents, and be kept open for the waste to breathe. | T | F |
| 29. Rocky Flats has a sanitary landfill that may be used as a hazardous waste landfill. | T | F |
| 30. In addition to RCRA, there is now the State of Colorado Hazardous Waste Control Law and the regulating agency, the Colorado Department of Health. | T | F |

COD078343407

Date: November 1, 1985
Revision No.: 0
H

APPENDIX H-3

Liquid Waste Training Material

Liquid Waste Processing - Building 374-774

Name _____ Employee No. _____
Date _____ Shift _____
Division 7 Line Number or Job Assignment _____
Instructor _____ Title _____

**STRUCTURED TRAINING - CHECK LIST
(OJT and Classroom Instruction)**

Discuss only those items which are applicable to this job assignment.

I. HAZARDS AND SAFETY

A. Health Sciences

Trainee Checked by

1. Means of reducing radiation exposure levels

- a. respiratory protective equipment
- b. proper wearing of badges
- c. proper taping of wrists
- d. hand counter operation and self-monitoring procedure review
- e. personnel protective equipment
- f. glovebox gloves visual check
- g. glovebox negative pressure
- h. decontaminating
- i. housekeeping
- j. Personal showers when actively engaged in the process area
- k. B-box Procedures
- l. Barrel opening requirements

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

2. Alarms

- a. air monitor
- b. enforce Health Sciences policies

_____	_____
_____	_____

Liquid Waste Processing - Building 374-774

**STRUCTURED TRAINING - CHECK LIST
(OJT and Classroom Instruction)**

I. HAZARDS AND SAFETY

Page 2

B.	<u>Nuclear Safety</u>	Trainee	Checked by
1.	Nuclear Materials Safety limits		
a.	valid limits posted	_____	_____
b.	discussed	_____	_____
c.	read and understood	_____	_____
d.	operational audit before starting job assignment	_____	_____
2.	Responsibility		
a.	set and enforce Nuclear Materials Safety limits	_____	_____
b.	routine audits	_____	_____
C.	<u>Industrial Safety</u>		
1.	Safety glasses and special safety equip- ment as necessary	_____	_____
2.	Location of eye and safety showers	_____	_____
3.	Tripping and slipping hazards	_____	_____
4.	Ladder safety	_____	_____
5.	Thermal burn safety	_____	_____
6.	Chemical hazards	_____	_____
a.	hazard ratings	_____	_____
b.	Nitrogen hazard	_____	_____
7.	Visibility in box		
a.	glovebox free of sharp objects	_____	_____
8.	High level alarms	_____	_____

Liquid Waste Processing - Building 374-774

**STRUCTURED TRAINING - CHECK LIST
(OJT and Classroom Instruction)**

I. HAZARDS AND SAFETY

Page 3

	Trainee	Checked by
9. Proper and in good condition tools	_____	_____
10. Pump safety	_____	_____
a. guards in place	_____	_____
11. Housekeeping	_____	_____
a. inside glovebox	_____	_____
b. working area	_____	_____
12. Responsibility	_____	_____
a. provide guidance that will prevent injury to personnel and damage to property	_____	_____
b. safety reviews and inspections of buildings and areas	_____	_____
13. Nonradioactive hazardous/toxic waste materials	_____	_____
a. proper container	_____	_____
b. proper label	_____	_____
c. proper storage	_____	_____
d. proper transporting equipment	_____	_____
e. personal protective equipment required	_____	_____
D. <u>Fire Prevention</u>		
1. location of fire reporting phone, nearest fire extinguisher	_____	_____
2. Housekeeping	_____	_____
3. Fire alarm emergency procedure	_____	_____

Liquid Waste Processing - Building 374-774

**STRUCTURED TRAINING - CHECK LIST
(OJT and Classroom Instruction)**

I. HAZARDS AND SAFETY

Page 4

- | | | | |
|----|--|-------|-------|
| 4. | Glovebox gloves tied away from heat source | _____ | _____ |
| 5. | Responsibilities | _____ | _____ |
| | a. fire extinguisher glove entry | _____ | _____ |
| | b. control of plutonium fires | _____ | _____ |
| | c. fight and contain fires | _____ | _____ |

E. Glovebox Safety

- | | | | |
|----|-----------------------|-------|-------|
| 1. | Glovebox glove change | _____ | _____ |
| 2. | Bag in - Bag out | _____ | _____ |
| 3. | Drum removal | _____ | _____ |

Chemical Operations
Liquid Waste Processing
Building 374

Name _____ Employee No. _____
Date _____ Shift _____
Division 7 Job Assignment _____ Decontamination Precipitation _____
Instructor _____ Title _____

STRUCTURED TRAINING CHECKLIST
(OJT and CLASSROOM INSTRUCTION)

II. DESCRIPTION

A. Purpose

The purpose of this process is to remove radioactive materials from Plant liquid waste streams. The system contains three stages, each with its own feed tank, reactor, flocculator, and clarifier. $MgSO_4$, $CaCl_2$, $Fe_2(SO_4)_3$, and NaOH are proportioned into the feed at the reactor to improve decontamination. A flocculant is added to the resulting feed in the flocculator which increases agglomeration.

B. Equipment

	<u>Trainee</u>	<u>Checked by</u>
1. Feed Tanks	_____	_____
a. D-812	_____	_____
b. D-816	_____	_____
c. D-820	_____	_____
2. Feed Tank Level Controls	_____	_____
3. Reactor Tanks	_____	_____
a. D-813	_____	_____
b. D-817	_____	_____
c. D-819	_____	_____
4. Reactor Tank Level Alarms	_____	_____
5. Flocculator Tanks	_____	_____
a. D-814	_____	_____
b. D-818	_____	_____
c. D-822	_____	_____
6. Flocculator Tank Level Alarms	_____	_____

Chemical Operations
Liquid Waste Processing
Building 374

STRUCTURED TRAINING CHECKLIST
(OJT and CLASSROOM INSTRUCTION)
Radioactive Waste Decontamination Precipitation
Page 2

	Trainee	Checked by
7. Clarifier Tanks		
a. D-815		
b. D-819		
c. D-823		
8. Clarifier Tanks Level Controls		
9. First Stage Feed Streams		
10. Second Stage Feed Streams		
11. Third Stage Feed Streams		
12. Sludge Removal Controls		
13. Reagent Metering System		
Gang Pumps		
a. P-843		
b. P-845		
c. P-846		
14. Feed Stream Controls		
through Three Stages		
15. Level Transmitters		
16. Flow Transmitters		
17. Turbidity Monitors		
18. pH Analyzer		
19. Polishing Filter FL-831		
20. Clarifier Effluent Tanks		
a. D-826 A		
b. D-826 B		
c. D-826 C		
21. Process Lab Sampling Station		

Chemical Operations
Liquid Waste Processing
Building 374

STRUCTURED TRAINING CHECKLIST
(OJT and CLASSROOM INSTRUCTION)
Radioactive Waste Decontamination Precipitation
Page 3

III. OPERATION

A. Preliminary Checks Before Operation	Trainee	Checked by
1. Manual valves that are closed	_____	_____
2. Manual valves that are opened	_____	_____
3. Setting metering devices and reagent metering pumps	_____	_____
4. Setting slurry take-off timers	_____	_____
5. Starting recorders	_____	_____
6. Breaker locations of all agitators and pumps	_____	_____
7. Setting flow, level, and ratio controllers	_____	_____
8. Starting agitators	_____	_____
9. Clarifier level control switch	_____	_____
B. Start Up First Stage		
1. Flow control to D-812 Feed Tank	_____	_____
2. Starting Feed Pump P-810 and Reagent Metering Pump P-843	_____	_____
3. Flow to D-816 second stage Feed Tank by P-837	_____	_____
4. Starting slurry take off Timer KIC-7536	_____	_____
C. Start Up Second Stage		
1. Flow control to D-816	_____	_____

Chemical Operations
Liquid Waste Processing
Building 374

STRUCTURED TRAINING CHECKLIST
(OJT and CLASSROOM INSTRUCTION)
Radioactive Waste Decontamination Precipitation
Page 4

	Trainee	Checked by
2. Starting Feed Pump P-811 and Reagent Metering Pump P-845	_____	_____
3. Flow to D-820 third stage Feed Tank by P-838	_____	_____
4. Starting slurry take off Timer KIC-7556	_____	_____
D. Start Up of Third Stage		
1. Flow control to D-820	_____	_____
2. Starting Feed Pump P-812 and Reagent Metering Pumps P-846	_____	_____
3. FL-831 precoat slurry preparation	_____	_____
4. Precoating FL-831	_____	_____
5. Putting FL-831 into operation	_____	_____
6. Flow control to FL-83 by P-852	_____	_____
7. Starting slurry take off Timer KIC-7576	_____	_____
E. Operating D-826 A, B, and C		
1. Level limits 0-90%	_____	_____
2. Sampling	_____	_____
3. Transferring to Evaporator Feed Tank	_____	_____
4. Transferring to second or third stage Feed Storage Tanks	_____	_____
5. Flow control to Evaporator Feed Tank D-827	_____	_____

Chemical Operations
Liquid Waste Processing
Building 374

STRUCTURED TRAINING CHECKLIST
(OJT and CLASSROOM INSTRUCTION)
Radioactive Waste Decontamination Precipitation
Page 5

F. Sampling	Trainee	Checked by
1. First stage D-812, D-815	_____	_____
2. Second stage D-816, D-819	_____	_____
3. Third stage D-820, D-823	_____	_____

IV. SHUTDOWN

A. Normal Shutdown

1. Put all flow controllers into local set point	_____	_____
2. Stop feed into D-812	_____	_____
3. Stop first stage Feed Pump P-810 and Reagent Pump P-843	_____	_____
4. Stop first stage Transfer Pump P-837	_____	_____
5. Stop first stage agitators	_____	_____
6. Stop feed into D-816	_____	_____
7. Stop slurry take off Timer KIC-7536	_____	_____
8. Stop Feed Pump P-811 and Reagent Pump P-845	_____	_____
9. Stop Second stage Transfer Pumps P-838	_____	_____
10. Stop second stage agitators	_____	_____
11. Stop feed into D-820	_____	_____
12. Stop slurry take off Timer KIC-7556	_____	_____

Chemical Operations
Liquid Waste Processing
Building 374

STRUCTURED TRAINING CHECKLIST
(OJT and CLASSROOM INSTRUCTION)
Radioactive Waste Decontamination Precipitation
Page 6

	Trainee	Checked by
13. Stop Feed Pump P-812 and Reagent Pump P-846	_____	_____
14. Take FL-831 out of operation	_____	_____
15. Stop third stage Transfer Pump P-852	_____	_____
16. Stop transfers from D-826 A, B, or C	_____	_____
17. Turn off D-815, D-819, and D-823 level control switches	_____	_____
18. Manual valves that need to be closed	_____	_____
B. Emergency Shutdown		
1. Stop all Pumps P-810, P-811, P-812, P-837, P-838, P-852, P-843, P-845, and P-846	_____	_____
2. Turn off power to FL-831 Panel	_____	_____
3. Stop all Feed Supply Pumps D-801 A, P, C; D-802 A, B, C; D-804 A, B, C, D; D-811 A, B; and transfer pumps that are in operation	_____	_____
4. Turn off D-815, D-819, and D-823 level control switches	_____	_____
5. Turn off Timers KIC-7536, -7556, and -7576	_____	_____

Chemical Operations
Liquid Waste Processing
Building 374

**STRUCTURED TRAINING CHECKLIST
(OJT and CLASSROOM INSTRUCTION)
Radioactive Waste Decontamination Precipitation
Page 7**

Note: Hazardous materials associated with the operation:

- Filter aid
- MgSO_4
- CaCl_2
- $\text{Fe}_2(\text{SO}_4)_3$
- NaOH
- Basic waste feed stream

CHEMICAL OPERATIONS
LIQUID WASTE PROCESSING
BUILDING 374

STRUCTURED ON-THE-JOB
WALKTHROUGH EXAMINATION

Name: _____ Employee No.: _____
Date: _____ Shift: _____
Division: VII Job Assignment: Decontamination Precipitation
Administered By: _____

	Trainee	Checked By
1. Demonstrate how to decant Tank D-824A.	_____	_____
2. Set up third stage to dump sludge for 6 seconds every 10 minutes.	_____	_____
3. Home the reagents that are added to the second-stage reactor Tank D-817.	_____	_____
4. Set up Tank D-826A to receive clarifier effluent from Tank D-823 via Pump 852.	_____	_____
5. Set up Tank D-804B to supply feed to the second-stage feed Tank D-816.	_____	_____
6. Set up Tank D-811B to supply feed to the first-stage feed Tank D-812.	_____	_____
7. What is the purpose of the turbidity monitors?	_____	_____
8. Demonstrate the startup and precoating of FL-831.	_____	_____

CHEMICAL OPERATIONS
LIQUID WASTE PROCESSING
BUILDING 374

STRUCTURED CERTIFICATION
EXAMINATION

Name: _____ Employee No.: _____
Date: _____ Shift: _____
Division: 7 Line No. or Job Assignment: Precipitation

Directions: Circle the T if the statement is TRUE and F if the statement is FALSE. 3 points for each correct answer.

1. Filtrate discharged from the vacuum drum filter is pumped to the First-Stage Precipitation Feed Tank D-812.

T F

2. Third-stage clarifier effluent may be pumped from D-823 (third-stage clarifier) directly to Evaporation Feed Tank D-827 without obtaining sample analysis.

T F

3. The effluent stream from the third-stage clarifier via P-852 is controlled by the use of a level controller.

T F

4. Checking reagent flows to the reactors is the responsibility of the precipitation process operator.

T F

5. The purpose of the D-823 clarifier rake is to slowly move the precipitated solids to the slurry draw-off line located in the center of the clarifier bottom.

T F

6. Gamma scan surveys are routinely conducted on the process vessels in Building 374 in order to detect plutonium composites.

T F

7. Precipitated sludge discharged from the clarifiers is drained to the vacuum filter feed tanks (D-824A and B).

T F

8. Tanks D-811A and B provide feed to either D-816, second-stage feed tank; or D-820, third-stage feed tank.

T F

9. Respiratory protection, protective clothing, and radiation monitor coverage is required for decontaminating any waste stream spills.

T F

10. Emergency procedure for a neutron alarm requires all pumps be turned off in the precipitation process.

T F

Directions: Circle the letter of the correct answer for each of the following questions. Four points for each correct answer.

11. Which of the following tank discharge streams can be sampled in the process lab?

- a. Tank D-813, first-stage reactor tank
- b. Tank D-823, third-stage clarifier
- c. Tank D-814, first-stage flocculator tank
- d. All of the above

12. What processes may be utilized within liquid waste processing for the treatment of waste liquids?

- a. Neutralization
- b. Precipitation
- c. Filtration
- d. Evaporation
- e. All of the above

13. Second-Stage Feed Tank D-816 provides feed for which of the following?

- a. D-813, first-stage clarifier
- b. D-812, first-stage feed tank
- c. D-827, evaporator feed tank
- d. D-817, second-stage reactor tank

14. What is the permissible pH range used in the precipitation process for proper decontamination of the waste solutions?

- a. 7.5 - 10.5
- b. 6.0 - 9.5
- c. 10.5 - 14
- d. 0 - 14
- e. 8.5 - 12.5

15. Which type of tank is associated within any one stage of the precipitation process?

- a. Feed tank
- b. Reactor tank
- c. Flocculator tank
- d. Clarifier tank
- e. All of the above

Directions: Fill in the blanks to the following questions and/or statements. Five points for each correct answer.

16. What is the purpose of the precipitation process?

17. When the second-stage flow is increased, what responds to increase reagent flow to the second stage?

18. Why is flocculent added to the feed in the flocculators?

19. Name the reagents used in the precipitation process.

1. _____
2. _____
3. _____
4. _____
5. _____

20. What is the normal pH valve used in the precipitation process?

21. What is the purpose of Filter 831, and which tanks receive the discharge flow from Filter 831?

22. What controls the sludge dumps from the clarifiers to Tanks D-824A and B, and what means is used in determining how much to dump?

23. If the clarifier effluent collected in Tanks 826A or B does not meet radioactive guidelines for transfer to D-827 (evaporator feed tank), where must it be transferred to?

24. In the precipitation process, waste solutions in Tanks 804A, B, C, and D are transferred to which stages of precipitation, and what determines to which stage the solution is transferred?

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